

RICE UNIVERSITY

**The Semantics of Indicative Mood Modal
Constructions**

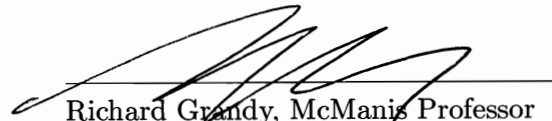
by

Michael Barkasi

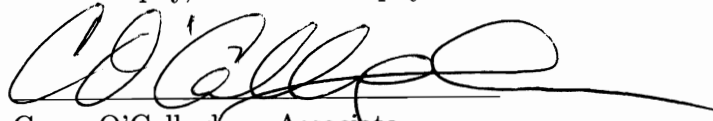
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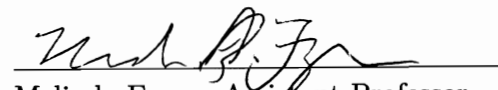
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ABSTRACT

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by

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John MacFarlane and Andy Egan have recently argued that a number of examples, “third-party assessments,” show that the contextualist view on “epistemic modals” held by Hacking, Teller and DeRose is incorrect. They argue that the examples support a relativistic semantics for epistemic modality. I argue that not every utterance of a modal sentence involving ‘may’ or ‘possible that’ expresses the epistemic reading, that the problematic examples are cases where the utterance is ambiguous between epistemic and circumstantial readings, and that it is the circumstantial reading which drives the problematic third-party assessments. The treatment presented here is similar to that of John Hawthorne and von Fintel and Gillies. A major component of the thesis is a careful study of the way in which contextual factors affect both the “flavor” of possibility expressed by an utterance and the ability of a speaker to defend their modal claim against problematic third-party assessments.

ACKNOWLEDGMENTS

All the members must be thanked for serving on my thesis committee. Without them I would not have a master's thesis. The audience at my fall 2010 work-in-progress talk on this material also gave valuable input. It is at that talk that I first saw the interpretation of "Hacking's observation" which I develop below. Many of the graduate students in the Rice philosophy department also discussed their intuitions on a number of cases with me. John MacFarlane and Kai von Fintel must be thanked for their email correspondence and for pointing me towards John Hawthorne's paper. Josh Brown has played an especially important role in the development of this project, him disagreeing with virtually every intuition I have on these cases. His not unreasonable obstinance in accepting my intuitions has forced me to carefully think through each case. Most importantly, Casey O'Callaghan and Richard Grandy must be thanked for the countless hours they have spent discussing this material with me. Without the discussions with Josh, Casey and Richard this project would not have developed to the point that it has. I should also thank the Rice philosophy department, both for giving me the opportunity to write this thesis and their flexibility. Last but not least, Anthony Várilly-Alvarado gave me the impetus for learning \LaTeX last year. Without that tool typesetting this thesis would have been a monumental challenge.

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PREFACE

This project on epistemic modals began in the fall semester of 2009 when I read Seth Yalcin’s paper “Epistemic modals.” (Yalcin, 2007) For awhile I was interested in giving a simpler, dynamic updated-based semantic solution to “Yalcin’s problem,” but became convinced that Moritz Schulz, in (2009), had essentially given the response I had in mind. So I moved on to MacFarlane’s problem. Luckily no one has sketched quite the thought I had on that one!

This project falls squarely in the tradition of finding truth conditions for expressions of natural language, in this case for certain modal sentences in English which I dub Moorean indicative mood modal constructions. It also is an exercise in “utterance semantics,” it is assumed that, due to contextual dependences, it is usually utterances of sentences which are true or false and not sentences themselves. One will not find though any claim in this thesis of the form “An utterance of ... is true if and only if ...” This is partly because I don’t know what the right truth conditions are for the epistemic reading of utterances of Moorean indicative mood modals. I am actually sympathetic to the classical contextualism of Hacking et al. The main thrust of this thesis is to argue that the supposed “problematic examples”—which have been so much grist for the mill of contemporary literature on “epistemic modals” and are supposed to show that classical contextualism cannot be correct—are not driven by the epistemic reading of utterances of Moorean indicative mood modals. It is a circumstantial reading of the utterance which drives the problematic evaluations. This idea is close to John Hawthorne’s, who suggests that the problematic examples involve a “danger” reading. The circumstantial reading is more general though: every “danger” modal is circumstantial, but not every circumstantial modal is a “danger” modal nor is it future directed.

An important feature of my proposal is the main argument about retractions. As I sketch out below, I take it that the best argument for taking the problematic utterances of eavesdroppers as appropriate or correct is that they force the speaker to retract their original claim, or at least make it inappropriate for the speaker to defend their original claim as true.

It is that the original utterance expressed a circumstantial modal, I claim, which drives this speaker retraction. More importantly, cases where there is a salient circumstantial reading to the utterance are the only cases, I claim, where this speaker retraction happens. Clear cases of utterances of epistemic modals are not cases where the speaker is forced to retract.

Another reason one will not find any truth conditions here is that I'm not sure *that* project is a good one. It is supposed to be a descriptive project: an utterance ... is true, *as used in the language*, if and only if ... But whose use are we trying to describe? The use of the common folk, the use of trained grammarians, the use of philosophers, logicians, or someone else? Where is the line between the "usual use" in the "natural language" and the theorizing of philosophers? When mining for intuitions on the cases, to whom ought I go? Of course, there are more high brow concerns of the sort expressed by Wittgenstein or Quine lurking the background as well. One could doubt, as I do, whether there really is anything, intentional or extensional, which determines truth conditions for Sally when she utters "Joe may be in Boston."

1 Introduction

Modals are words like ‘may,’ ‘possible,’ ‘must,’ ‘necessary,’ ‘eventually,’ ‘ought to,’ ‘have to,’ and ‘permissible’ which combine with an independent clause, called the **prejacent**, to say something about its *mode of truth*. (Goldblatt, 2006, 2) Examples of **modal sentences**, i.e. sentences whose “main connective” is a modal term, include,

Joe may be in Boston.

It’s possible that he will be late.

Sleuth will eventually crack the case.

Bill needs to keep in better touch with John and Jane.

Fred probably shouldn’t buy lottery tickets at all.

It’s permissible to disagree with the authors of Master’s theses.

It’s possible for there to be Chalmers zombies.

It is assumed in this project that utterances are the carriers of truth value. Sentences, because of potential contextual dependencies, are not true or false, although the truth value of utterances of a single sentence can be invariant. Thus utterances of modal sentences say things about what is possible. The utterance “Joe may be in Boston” says that Joe being in Boston is possibly true.

Of course, one sort of possibility that philosophers like to trade in is logical or alethic possibility. An utterance of “It’s possible for there to be Chalmers zombies” presumably expresses this sort of possibility. Examples from philosophical literature aside, the consensus is that utterances of modal sentences generally do not express logical possibility. Natural language is rife with deontic, temporal, bouletic, circumstantial and teleological modalities to name a few, e.g. “It’s permissible to stay late,” “Eventually we’ll win,” “He just must love me,” “I have to sneeze” and “I need to buy a hammer to finish the project.” But there is another bunch of modal sentences common in English which don’t seem to express either logical possibilities or the ones just mentioned. They are sentences paradigmatically involving the locution ‘possible that’ or ‘may’ on its non-deontic reading. For example:

Joe may be in Boston.

It's possible that he will be late.

Fred may win the lottery.

You might have left your keys in the car.

G.E. Moore, and then Ian Hacking, noted that utterances of these sentences have a peculiar feature. They often cannot be truly said by someone who knows that their prejacent is false. As Hacking says, if he is sitting in a room and can see that there are only a few chairs in the room he could not truly say "It's possible that there are two hundred chairs in this room."

Picking up on this cue, Moore and the literature that followed him suggested that utterances of these sentences express epistemic possibility, hence the name "epistemic modals." To say "Joe may be in Boston" is to say something about what's possible, given what's known. But known by whom? The "contextualist" position developed by this literature suggests that an utterance of this type is true just in case the prejacent is not ruled out by what's known to some group determined by the context of utterance. The problem, now well known to those who have read the contemporary literature, is that people often evaluate the truth of utterances of this sort in a way which isn't compatible with the contextualist story. To use MacFarlane's example, if Sally says to George "Joe may be in Boston" and you overhear her, on the supposition that you just saw Joe down the hall here in Berkeley it seems natural for you to say "That's not true, he can't be in Boston." People often seem to evaluate utterances of these claims based on what they know, not based on some perceived contextually determined group.

This problem has given rise to a number of positions on "epistemic modals," including relativism, expressivism and fancier versions of contextualism. The position laid out in this paper falls somewhere in between the cloudy contextualism of von Fintel and Gillies and the "danger reading" of John Hawthorne. First, it seems clear that utterances of modal sentences in the relevant form often express non-epistemic readings, in particular circumstantial readings. There isn't one particular "flavor" of modality, to use von Fintel and Gillies' term, which is usually expressed by utterances of these sentences. In line with

von Fintel and Gillies I argue that the problematic cases are cases where the utterance is actually ambiguous between a number of different readings, while in line with Hawthorne I argue that the reading which drives the problematic evaluations in the problematic cases is the circumstantial reading. When Sally says “Joe may be in Boston” what you, the kibitzer, are evaluating as false isn’t some epistemic claim about what’s possible given what’s known, but rather is a circumstantial claim. Given the circumstances that Joe is here in Berkeley it’s impossible that he’s in Boston. What motivates Sally to say “Joe may be in Boston” is an epistemic claim—for all she knows he’s in Boston—but what Sally says is ambiguous between that epistemic claim and the circumstantial one you end up evaluating.

A number of caveats are in order. First, one familiar with the literature will notice that I stay away from the word ‘might’ and use ‘may,’ e.g. ‘Joe may be in Boston’ instead of ‘Joe might be in Boston.’ This is because ‘might’ is the past of ‘may,’ although there does seem to be a tendency in colloquial talk to use them interchangeably or to use ‘might’ to express a sort of possibility weaker than ‘may.’ The reader is free to substitute ‘might’ where I use ‘may.’

Second, I see this project as largely one of collecting observations. My goal is not to pin down specific truth conditions for the epistemic reading of utterances of the relevant sort. I hope to sketch, from the observations made, a picture of “epistemic modals” which can be carried across a number of semantic frameworks. If static possible world semantics are your thing, then probably what you want is the variant of von Fintel and Gillies’ “cloudy contextualism” which allows for circumstantial readings to be put into play. But the picture sketched here could be filled out in the framework of a dynamic, updated-based semantics as well.

Third, as this is a descriptive project there will inevitably be a good amount of disagreement over what examples represent intuitively correct or common use. Most contemporary authors acknowledge the divergence in intuitions. I try to motivate most of the intuitions that I peddle by pointing to features of the examples which have not been discussed in the literature. Hopefully I convince you.

A fourth and final point regards the *prima facie* plausibility of my main claim. The claim that the utterances in the problematic examples express circumstantial, and not epistemic,

modality may seem implausible. If it is correct, why have so few people even considered such a view?¹ But confusing circumstantial modals for epistemic modals is not difficult to do. Unlike most other modals the modal base of both epistemic and circumstantial modals consists of possible worlds consistent with some set of facts, as opposed to, e.g. some set of regulations (deontic), ends (teleologic), or laws (nomologic). The difference between the two lies in perspective. The modal base for epistemic modals consists of possible worlds consistent with facts that are known, while the modal base for circumstantial modals consists of possible worlds consistent with the circumstances (the facts that hold.) They end up looking similar because we generally assess both circumstantial and epistemic modals based on what is known of the circumstances—it's just that in the former case what delimits the modal base is the circumstances while in the later case it's what is known of them.

A brief comment on notation. I use single quotes ‘ ’ to mark the use/mention distinction and double quotes “ ” either to mark utterances or as scare quotes, e.g. ‘Joe may be in Boston’ is a sentence and “Joe may be in Boston” is an utterance of that sentence. In hindsight I ought to have used an abbreviation such as IMM for ‘indicative mood modal.’

¹As far as I know, myself, John Hawthorne (2007) and Alan White (1975) are the only three people to propose that these utterances have non-epistemic readings.

2 History and Background

G.E. Moore was the first philosopher to note that there is a common reading of modals in English which does not express logical, sometimes called alethic, possibility. (Moore, 1959; 1962) Moore called this use *epistemic*, since he thought that ‘It’s possible that φ ’ is semantically equivalent to ‘It’s not certain that not φ .’ (1962, 184) Ian Hacking brought substantial attention to this use by showing in his paper “Possibility” (1967) that this semantic analysis could not be correct. In a series of papers Hacking, Paul Teller and Keith DeRose developed an account of the semantics of this use which Kai von Fintel calls the “canon,” or which is usually just called *contextualism*.¹ (Hacking, 1967; 1975; Teller, 1972; DeRose, 1991) More recently John MacFarlane and Andy Egan, among others, have argued that the way in which epistemic modal claims are evaluated is not consistent with contextualism as developed by Hacking et al. or any reasonable variant thereof. (MacFarlane, 2011; Egan, 2007; Egan et al., 2005; Stephenson, 2007)

In this section I review the literature by Hacking, Teller and DeRose, set out the problematic examples raised by MacFarlane and Egan, and summarize the contemporary debate over these problems. While much of the current literature on these examples centers around contextualism versus relativism as the proper semantic framework for “epistemic modals,” my perspective here is of these examples as data for any semantic account of indicative mood modal sentences—a technical grammatical notion to be made precise in 2.1.2.² As I shall argue over the course of this thesis, both contextualism and relativism fail to account for these examples because, in fact, these examples are cases where the indicative mood modal is not straightforwardly epistemic.

¹Reading my thesis—and much of the current literature—one may think that “classical” contextualism, as opposed to the “cloudy” contextualism of von Fintel and Gillies, is dead. Michael Huemer is one contemporary “classical” contextualist. (Huemer, 2007) John Hawthorne, once a relativist, also seems sympathetic to classical contextualism.

²Here ‘epistemic modal’ is in scare quotes because, as I discuss in section 3.1.3, what the current literature means by it is not what was meant by Hacking et al., nor what I mean when, in line with definition 2.1.5.1, I speak of epistemic modals.

2.1 Non-Logical Possibility

2.1.1 Moore's Observation Moore, and then Hacking, both made observations about certain readings of certain grammatical constructions involving 'possible' in English which show that modal sentences do not always express logical possibility. Moore makes two observations about sentences similar in form to 'It is possible that I am sitting now,' or synonymous sentences involving 'may,' e.g. 'I may be sitting now.'³ The first is that someone who knew that he is not sitting now would speak falsely if he made such a claim, at least on some readings of the utterance. Second, someone—speaking to a group of people including one who knew the speaker was not sitting—would also speak falsely if he made such a claim—at least on some readings, as before.⁴ This, Moore says, is different from sentences similar in form to 'It is possible that I should have been sitting now,' or synonymous sentences involving 'might have been,' e.g. 'I might have been sitting now.' These sentences could truthfully be asserted by someone who knew he was not sitting, or by someone speaking to a group of people including one who knew the speaker was not sitting.

In his posthumously published private notes, *Commonplace Book 1919–1953*, we find the example just given:

I *may* go out this evening = I don't know that I shan't nor yet that I shall = It's possible I shall, but also possible I shan't. What proves that this doesn't mean merely: That I shall go out this evening is not a self-contrad. prop.? The proof is that where a prop. is *not* self-contradictory, I often know it's false: e.g. that I'm not sitting down. If any one says: It's just possible that you're not; it's right to answer: No, there's no chance that I'm not; I know I am. But: it's *possible* that I should not have been sitting now—I might not, is compatible with I know I am. (Moore, 1962, 184–5)

Other comments to similar effect are found in his 1941 Howison lecture at the University of California, published (1959). While discussing arguments for skepticism of the form ' φ is contingently true; therefore, it is possible that not φ ,' he says:

³Whether or not these really are synonymous is taken up in section 3.1.2. The upshot is that they seem to have readings on which they are synonymous and readings on which they aren't.

⁴As will be discussed below, at least at some places in their writing both Moore and Hacking suggest that there is only one reading of sentences similar in form to 'It is possible that I am sitting now.' I have added the caveats because it seems that these sentences often have readings different from the one Moore and Hacking discuss.

To take, for instance, again, the proposition that I was then standing up: from the fact that this proposition was contingent, it does not follow that, if I had said ‘It is possible that it is not the case that I am standing up,’ I should have been saying something true. That this is so follows from my former contention that the contingency of the proposition in question does not entail that it was not known to be true, because one, at least, of the ways in which we use expressions of the form ‘It is possible that p ’ is such that the statement in question cannot be true if the person who makes it knows for certain that p is false. We very, very often use expressions of the form ‘It is possible that p ’ in such a way that by using such an expression we are making an assertion of our own ignorance on a certain point. (Moore, 1959, 232)

In addition to this observation, Moore suggests a few other features of modal sentences of this form. Among these, he suggests that the sentence ‘I know not φ ’ is incompatible with ‘It is possible that φ ’. (Moore, 1962, 187) But ‘I know not φ ’ is not incompatible with ‘It is possible that φ ’ independent of to whom ‘I’ refers. He also says that ‘It is possible that φ ’ is semantically equivalent to ‘It’s not certain that not φ ,’ (1962, 184), while saying that ‘I know not φ ’ does not always contradict ‘It is not certain that not φ ,’ since, e.g. it seems that someone speaking to a group of people could truly say “It’s not certain that Moore is still alive” even though Moore might well know he is alive. (Moore, 1962, 278)

Although imprecise, the following definition is a convenient label. It will be amended below.⁵

Definition 2.1.1.1. *A modal sentence with φ as its prejacent is **Moorean** if and only if it would be incompatible with “I know that not φ ,” spoken by at least some other individuals.*

Thus we might say that Moore’s observation is that at least some modal sentences have readings on which they are Moorean.

Hacking, it seems, makes similar remarks. He says,

Evidently not all logical possibilities are possible. It is not possible that there are two hundred armchairs in my room as I write these notes, for I am sitting here in these cramped quarters and can see perfectly well that there are only three or four chairs altogether. It would be absurd to say to someone, as if I meant it, that there may be two hundred chairs in this room: not only absurd, but also false. It would be equally silly to say that it is possible that there are

⁵The required amendment is that it is *utterances* of modal sentences which are either Moorean or not. This is because the same modal sentence can have different readings which are expressed in different contexts and one reading may be so contradicted while another not.

two hundred—or even a dozen—armchairs in my room as I write these words. We have a logically possible state of affairs that is not possible. (Hacking, 1967, 145–146)

I take it that both Moore and Hacking’s observations are descriptive and not normative: there is a way in which we speak of things as being “possible,” in English, which does not have the truth conditions which we expect from logical possibility.⁶ Moore, as mentioned above, suggests truth conditions for this type of possibility: φ is possible, in this sense, if and only if φ is not known to be false by anyone in some group relevant to the assertion. Before discussing Hacking’s famous critique of this account and the ensuing papers by Teller and DeRose it is worth discussing just which sentences have readings on which they are Moorean.

2.1.2 Indicative Mood Modal Constructions For the moment it is convenient to ignore the complications which arise from there being alternative, non-Moorean readings of ‘It is possible φ ’ and similar sentences. The comments above suggest that such sentences where φ is in the indicative mood or synonymous sentences of the form *may*(φ) involving ‘may’ are Moorean, while those where φ is in the subjunctive mood or synonymous sentences involving ‘might have been’ are not and express logical possibility. But even putting aside the complication that such sentences have different readings, not every sentence of the form ‘It is possible φ ’ where φ is in the indicative mood is Moorean, and not every sentence where φ is in the subjunctive mood expresses logical possibility. Things are further complicated when φ is not in the present tense.

To see the first point, consider the following example from Teller. (Teller, 1972, 306)
Contrast:

- (1) It is possible for me to take all my clothes off before your very eyes.
- (2) It is possible that I will take my clothes off before your very eyes.

On their usual readings, Teller suggests, (1) could be true while (2) is false. If spoken by Teller, (1) would be consistent with his knowledge that he will not remove his clothes—and

⁶As Josh Brown has suggested to me in conversation, it is not clear that Moore himself was trying to describe the common use of possible-that constructions as opposed to giving a prescriptive, Russellian “logical analysis.” Here I stay away from exegesis of Moore’s text. The comments on Moore which follow are an attempt to fit Moore’s work into the broader work on “epistemic modals” which followed.

hence is not Moorean—while (2) would be inconsistent with that knowledge—and hence is Moorean.

To see the second point, consider the following example, taken from Hacking. (Hacking, 1967, 147)

- (3) It is possible that the ballot box were rifled. (It is possible that the ballot box should have been rifled.)⁷
- (4) It is possible that the ballot box was rifled.

Note that (4) has the prejacent in the indicative mood and seems to be Moorean—it suggests that the election was rigged and someone who knew that it was not could contradict the claim. But (3), though having the prejacent in the subjunctive mood, does not seem to express logical possibility but rather in contrast to (4) suggests that the election procedures were not such as to prevent the election from being rigged.

Finally, consider the synonymous ‘may’ construction to (4). The prejacent of (4) is ‘The ballot box was rifled,’ a clause in the past tense. The corresponding ‘may’ construction also needs to be in the past tense, so here the corresponding ‘may’ construction is ‘The ballot box might have been rifled.’ Thus not all modals of the form ‘might have been’ are non-Moorean, since a prejacent in the past tense will force this particular grammatical construction. But also note that that is the corresponding ‘might have been’ construction for (3). Hence modal constructions *may*(φ) with the prejacent φ in the past tense can be ambiguous between synonymous possible-that constructions: e.g. ‘The ballot box might have been rifled’ could be read as either (3) or (4). Unless otherwise stated, all such *may*(φ) constructions below are intended to be read similarly to (4).

Some other examples drawn from the literature suggest that this pattern is fairly stable:

- (5) It is possible that John be in Boston. (It is possible that John should have been in Boston.)
- (6) It is possible that John is in Boston.
- (7) It is possible that he be blind now. (It is possible that he should have been blind by now.)

⁷ As I have done here, in cases where the subjunctive mood feels archaic in the present tense I put a presumably synonymous variant with helping verbs in parentheses.

- (8) It is possible that he is blind now.
- (9) It is possible that the kettle should have boiled dry in five minutes.
- (10) It is possible for the kettle to boil dry in five minutes.
- (11) It is possible for sand to wear down a mountain.
- (12) It is possible for him to be a woodsman.
- (13) It is possible for the judge to give the woman a suspended sentence.
- (14) It is possible that the judge will give the woman a suspended sentence.

Those sentences which have the form ‘It is possible that φ ’ where φ is in the indicative mood seem to have readings which are Moorean, while those where φ is in the subjunctive mood or which have the form ‘It is possible for x to P ’ never have readings which are Moorean. This suggests the following grammatical class of sentences.

Definition 2.1.2.1. *A sentence is an **indicative mood modal construction** if and only if it is of the form ‘It is possible that φ ’ with φ in the indicative mood, is a synonymous sentence involving ‘may,’ or a sentence synonymous to one of these two forms.*

It seems then that indicative mood modal constructions tend to express modal propositions which are false if their prejacent is known to be false. Moore thought that the truth conditions for these sentences were fairly simple, that indicative mood modal constructions express propositions which are true if their prejacent is not known to be false. As the next examples show this is not the case.

2.1.3 The Development of Contextualism Let φ be an indicative mood modal construction with prejacent ψ , e.g. φ is ‘It is possible that ψ .’ As the wording of definition 2.1.1.1 suggests, whether or not φ is Moorean depends on the proposition expressed by φ . If φ expresses different propositions in different contexts of utterance, then some instances of φ may be Moorean while other instances of φ may not be. For example, in those cases where ‘The ballot box might have been rifled’ is read as (4) the utterance will be Moorean, while those where it is read as (3) will not be. The topic of this section is the truth conditions of Moorean (instances of) indicative mood modal constructions.

Let us say that someone utters φ , and assume the utterance is Moorean. What are the truth conditions for φ ? That the utterance of φ is Moorean implies at least a necessary

condition on the truth of the utterance of φ , namely that ψ is not known to be false. But known to be false by whom? One suggestion is that ψ cannot be known to be false by the speaker, but as Moore's initial observation shows the knowledge of other conversation partners is often relevant. Consider an example suggested by Moore:

Example 2.1.3.1. Moore's Example. (1962, 186) It's 1945 and Berlin has just fallen to the Soviets. Some Soviet infantry are searching for high ranking Nazi officers when one says,

(15) Soldier: Hitler may be alive.

If one of his compatriots had recently been briefed that Hitler had been found dead, the original utterance would be false and the compatriot right to say,

(16) Compatriot: No, we just found him dead in his bunker a few hours ago. □

But on the other hand, it's not that ψ cannot be known by anyone, for in the example Hitler himself would know, if he were still alive, that he is but this, in the context of the infantry man's utterance, would not make the utterance false—or at least, Moore suggests as much. The compatriot, for example, would certainly not consider what Hitler himself or those Germans around him potentially know about his status when evaluating the truth of (15). This suggests that for each utterance of an indicative mood modal there is some group of people whose knowledge is relevant to the truth of the of the assertion and that the members of this group are determined by the context of utterance. Thus the necessary condition can be put: a Moorean utterance of φ is true only if ψ is not known to be false by anyone in the contextually determined group.

A natural suggestion is that this condition is sufficient as well: if no one in the group determined by the context of utterance knows that ψ is false, then the proposition expressed by that utterance of φ is true.

Definition 2.1.3.2. Moore's Condition. *A Moorean utterance of an indicative mood modal construction φ with prejacent ψ is true if and only if no one in the group determined by the context of utterance knows that ψ is false.*⁸

⁸This definition, and the three that follow from Hacking, Teller and DeRose should be read with the qual-

Moore himself seems to suggest this when he says that epistemic possibility is “the sense in which ‘It’s possible that φ ’=‘It’s not certain that not φ ,’” (Moore, 1962, 184), since in his paper “Certainty” (1959) he says that ‘It’s certain that φ ’ is true if and only if at least one person in the relevant group knows that φ . (1959, 250–251)

Hacking showed that this analysis could not be correct by considering several examples of Moorean utterances of indicative mood modal constructions.⁹ His most famous example involves incompetent maritime salvage workers:

Example 2.1.3.3. The Salvage Worker. (Hacking, 1967, 148) There is a salvage crew searching for a sunken ship. The mate of the salvage ship, after looking through an old log and making some erroneous calculations, says,

(17) Mate: It’s possible that the wreck is in these waters.

But if after the fact, when no wreck is found in those waters, the captain examines the log and sees that the ship was nowhere near that location it seems he would rightly say,

(18) Captain: The wreck couldn’t have been here!

Indeed; it seems that the mate said something false in uttering (17), although the falsehood did not arise from what anyone actually knew at the time. □

One could suggest that this example is best explained by saying that it is not the information contained in the log which makes the mate’s utterance false but rather that after the fact he or his fellow crew come to know the information in the log. (Thus it is their later knowledge of not ψ that leads us and them to evaluate the mate’s utterance as false.) But this explanation runs aground on two points. First, it seems that even if the example is run so that neither the mate nor any of his fellow crew come to know anything else about the wreck the mate will still have spoken falsely.¹⁰ Thus the falsity of the utterance does not seem to depend on anyone knowing anything. Second, it is not true that in general

ification “A Moorean utterance of an indicative mood modal construction φ with prejacent ψ is true *on the particular reading we have in mind* ...” since as I argue there are readings of Moorean utterances of indicative mood modals different from the epistemic reading.

⁹As I argue in section 3.2.1, neither The Salvage Worker nor the lottery examples are relevant to the truth conditions of the epistemic reading, since the modal utterances in these examples do not express the epistemic reading.

¹⁰This point is very similar to what I call “Hacking’s observation,” see section 3.2.1.

we evaluate indicative mood modal claims based on our present information. Consider Hacking's second and third examples:

Example 2.1.3.4. The Fair and Crooked Lotteries. (Hacking, 1967, 148–149) Say that Fred buys a lottery ticket. Fred's pessimistic friend remarks at the time,

(19) Fred's Friend: You may win, but you probably won't.

As expected, Fred loses. But it is unnatural to say, in hindsight, that Fred's friend spoke falsely or that Fred *couldn't* have won. Fred's friend spoke truly. To see this, consider a contrast case where the friend's utterance is definitely false. Imagine in this case that the lottery is rigged so that only the proprietors can win. In this case if Fred's friend says,

(20) Fred's friend: You may win, but you probably won't.

it seems natural to say that he's wrong; not only will Fred probably lose, it's not possible for him to win. □

Given these considerations, Hacking suggests that the crucial aspect to the Salvage Worker and Crooked Lottery examples which makes the respective utterances false is that a practicable investigation would have established that the prejacent is false. The mate could have more carefully reviewed the log and Fred's friend could have looked into the lottery.¹¹ Thus Hacking suggests the following truth conditions:

Definition 2.1.3.5. *Hacking's Condition.* *A Moorean utterance of an indicative mood modal construction φ with prejacent ψ is true if and only if no one in the group determined by the context of utterance knows that ψ is false, nor would any practicable investigations (by those in the group) establish that it is false.* (Hacking, 1967, 149,153)

Of course, this definition is incomplete in several respects. Like Moore's condition, the definition does not say anything about how the group of relevant people is established by

¹¹It's not clear in what sense there's a "practicable" investigation which would have lead Fred's friend to discover that the lottery was rigged. Usually such things aren't very practicable. Josh Brown has suggested that this could be fixed by stipulating that there is in fact a practicable way for Fred's friend to come to know that the lottery is rigged, perhaps if its proprietors are known thieves. But a more important point, to be taken up in section 3.1.2, is that it can be hard to hear Fred's friend's utterance as expressing something about what's known. When the prejacent is in the future tense there are often non-epistemic readings of the modal which are more natural than the epistemic one. Doesn't "You may win the lottery" just say that Fred's ticket has a non-zero chance of being picked?

the context. But a second problem now is the notion of a “practicable investigation.” Just which investigations count as practicable? “Practicable” is also a modal notion, so one may also worry that this definition is circular. Hacking argues though that it is not, saying that the modality involved in “practicable” is the sort expressed by possible-for constructions—i.e. which investigations are practicable are those that are possible for someone to do, in some sense. Thus the definition is not viciously circular, since we are trying to give an account of possible-that constructions or, more broadly, indicative mood modals.

Teller provides an example of an indicative mood modal which shows that no explication of “practicable” can lead to a correct definition, since it is a clear case where there is some practicable investigation that would establish the truth or falsity of the prejacent but where the modal claim is true. This next case shows the problem, while the following suggests a solution:

Example 2.1.3.6. The Doting Grandmother. (Teller, 1972, 307) An expectant father can truly say,

- (21) Expectant father: It is possible that my child will be a boy, and it is possible that my child will be a girl.

despite the fact that there is a practicable test which will establish the child’s sex. The availability of the test does not make the agonizing grandmother’s utterance false when she says,

- (22) Doting Grandmother: It’s possible it will be a boy, it’s possible it will be a girl. Should I buy blue or pink? □

Example 2.1.3.7. Two Detectives. (Teller, 1972, 310) As Teller describes, “the well-known detectives, Sleuth and Private Eye, have been assigned to investigate the murder of McRich. Their only suspect thus far is McRich’s nephew, a sleazy character who figures prominently in the old man’s will. Private Eye has been investigating the nephew’s whereabouts during the last 24 hours, and uncovers conclusive evidence that during the evening he was 10 miles from the scene of the crime. But the nephew’s whereabouts in the morning remain unknown.” Given this, it seems natural for Private Eye to say things like,

- (23) Private Eye: It’s possible that the nephew is the murderer.

Teller continues, “meanwhile, Sleuth has been at the morgue establishing the exact time of death, and concludes that the crime must have been committed between the hours of seven and eight p.m.” In view of this evidence it seems natural for Sleuth to say things like,

(24) Sleuth: It’s possible that the nephew is the murderer.

But later, after the two detectives compare notes and realize that their combined evidence shows that the nephew is not the murder (he was 10 miles from the scene of the crime when McRich was killed) it seems natural for them to judge their previous assertions as false:

(25) Private Eye: It wasn’t possible that the nephew did it after all! □

The key feature of this example, Teller suggests, is that in some sense the two detectives would have known the prejacent was false, if only they had put their knowledge together. This is what makes the modal claim false. Thus Teller suggests the following definition.

Definition 2.1.3.8. *Teller’s Condition.* *A Moorean utterance of an indicative mood modal construction φ with prejacent ψ is true if and only if no one in the group determined by the context of utterance knows that ψ is false, nor is there a member, t , of the group such that if t were to know all the propositions known to those in the group, then he could, on the strength of this knowledge of these propositions as basis, data, or evidence, come to know that ψ is false. (Teller, 1972, 310–311)*

Presumably Teller’s definition gets The Salvage Worker example correct for the following reason. The wording of the example suggests that the mate knows all the important facts listed in the log book, but somehow just miscalculates. Presumably one of his fellow crew, if they had known the facts listed in the log book known to the mate, would have known the wreck could not be where the mate said it might be.

As DeRose points out in (1991), a weakness of Teller’s definition is that The Salvage Worker example is easily amendable so that the mate does not know all the important facts listed in the log book. The example can be run again so that the mate misread the important entries, or perhaps did not read them at all. In this case, if it is still true that the mate spoke falsely when he said that it’s possible that the wreck is in such-and-such waters, then Teller’s definition is incorrect. DeRose argues that the mate still would have

spoken falsely in this case, but also offers another example (Cancer Test B, below) where the prejacent is not known to be false on even the combined knowledge of the contextually determined group but where the indicative mood modal seems clearly false. The set up for the examples is that John has some symptoms indicative of cancer and has just had a “filtering” test which if “negative” conclusively rules out cancer, while if “positive” neither confirms nor rules out cancer. DeRose says, “We will suppose that, before the test is run, the doctor tells John and his family that there is a 30% chance that John has cancer and a 45% chance that the test will be positive.” (DeRose, 1991, 582)

Example 2.1.3.9. Cancer Test A. (DeRose, 1991, 582) DeRose continues, “John’s doctor has received the results of the test, which are negative, but has not told anyone else what the results are. The hospital’s policy is that the results of this test are given to the patient and his/her family only in person. When a doctor gets the results, he calls the patient and makes an appointment for the patient to come in for results. John’s wife, Jane, has received the call, so she knows that the doctor knows the results of the test, but she does not know what the results are. John’s estranged brother, Bill, who lives far away, but who has heard a rumor that John has cancer, calls Jane and says,”

(26) Bill: I’ve heard John has cancer. Is it true?

It seems that one natural way for Jane to respond to Bill is to say,

(27) Jane: It’s possible that John has cancer. He has some of the symptoms. But it’s by no means certain that he’s got it. They’ve run a test on him which may rule cancer out, but they won’t tell us the results of the test until tomorrow.

But it also seems natural for John’s doctor to say to another doctor something like,

(28) It’s impossible that John has cancer, so we should start planning tests for other diseases. □

DeRose notes that one may also suggest that an equally appropriate—or perhaps more appropriate—response from Jane to Bill is that she doesn’t know whether or not it’s possible that John has cancer. What is important for Teller’s definition is that this response still seems appropriate when the example is modified slightly.

Example 2.1.3.10. Cancer Test B. (DeRose, 1991, 587) As DeRose says, “in this case, the test has been run, but not even the doctor knows the results of the test. A computer has calculated the results and printed them. A hospital employee has taken the printout and, without reading it, placed it in a sealed envelope. The policy of the hospital is that the patient should be the first to learn the results. Jane has made an appointment to pick up the results tomorrow. She knows that the envelope with the results has been generated and that nobody knows what the results are. Still, if Bill were to call her to find out the latest news, she might very well say,”

(29) Jane: I don’t yet know whether it’s possible that John has cancer. I’m going to find that out tomorrow when the results of the test are revealed. □

If Teller’s definition were correct, then since no one knew that John didn’t have cancer nor could anyone, if they knew what everyone else knew, come to know John didn’t have cancer, Jane could have truthfully said that John may have cancer and should not have said that she didn’t know whether it was possible he did.

So Hacking’s definition seems to count certain indicative mood modals as false which we intuitively count as true, while Teller’s definition seems to count certain indicative mood modals as true which we intuitively count as false. DeRose attempts to take a middle ground between the positions by suggesting, in line with Hacking, that what can come to be known is important but only if the way in which it can come to be known is relevant to the context. Somehow then checking the log is relevant in the Salvage Worker case, but gender tests aren’t relevant in the case of the Doting Grandmother.¹² Before giving truth conditions DeRose gives an explanation of the Cancer Test cases. In both A and B, it is appropriate for Jane to say it’s possible that John has cancer if she is referring to what is possible, given what she and John know, while it is appropriate for Jane to say she doesn’t know whether it’s possible that John has cancer if she is referring to what is possible, given the larger epistemic state including the doctor’s knowledge, the print out the test results, etc. (1991, 587–586, 591–592) So DeRose amends Hacking and Teller’s definitions as follows.

¹²DeRose’s observations are important not only because they show that Hacking and Teller’s definitions are extensionally incorrect, but also because they show that Hacking and Teller’s definitions are too rigid. There seem to be multiple correct ways for Jane to respond in the cancer test cases and the right truth conditions for indicative mood modals should reflect that flexibility.

Definition 2.1.3.11. DeRose’s Condition. *A Moorean utterance of an indicative mood modal construction φ with prejacent ψ is true if and only if no one in the group determined by the context of utterance knows that ψ is false, nor is there any relevant way by which members of the group can come to know that ψ is false.* (DeRose, 1991, 593–594)

2.1.4 Comments on Contextualism Note that all four of the above definitions assume that the truth of “It’s possible that φ ” is determined by what is known by some group of people determined by the context of utterance. The project though is descriptive; Hacking et al. are not trying to define some technical notion, but rather to describe the semantics of a commonly used locution of English—or at least one reading of this locution. The examples, insofar as they represent the way in which competent speakers use such locutions (use indicative mood modal constructions) show that “what is known by some group of people” cannot simply be, say, the union of everything known by all members of the group (*à la* Moore) or the distributed knowledge of the group (*à la* Teller,) if the definitions are to capture actual use. Thus Hacking and DeRose introduce the idea that “what is known by the group” also includes things that members of the group “can come to know” in some “relevant” way. This device is needed to better fit the definitions to the data at hand. Egan, in (2007), introduces the clever term ‘epistemic reach’ to capture things like practicable investigations and other ways of coming to know. What’s in the epistemic reach of a group is what the group can come to know through relevant or practicable means.

For the next definition, *what is known by a group* will be assumed to include (i) some appropriate amalgamation of what the members of the group know, e.g. the union of everything known by all members of the group or the distributed knowledge of the group and (ii) what’s in the epistemic reach of the group. If φ is an indicative mood modal with prejacent ψ , then on the epistemic reading *φ is true if and only if ψ is not known to be false to the group determined by the context of utterance.* Call this the **basic contextualist scheme** for indicative mood modals. Insofar as the above definitions do not specify how a group is associated with a context of utterance they are incomplete; and in fact one may worry that even after we use the technical device of “epistemic reach” to fit the data as best we can there will still be cases where the context of utterance fails to deliver a group—where

the context is *indeterminate* with respect to a group—or cases where the context is not only indeterminate between a number of groups but also where none of these potential groups delivers the use seen in the example.¹³ Such indeterminate contexts introduce ambiguity into the utterance, and in cases where none of the potential groups delivers the use that ambiguity is “unresolvable.”

For example, consider Cancer Test A and B. In A Jane says to Bill, “It’s possible that John has cancer. He has some of the symptoms. But it’s by no means certain that he’s got it. They’ve run a test on him which may rule cancer out, but they won’t tell us the results of the test until tomorrow.” The last sentence ‘They’ve run a test on him which may rule cancer out, but they won’t tell us the results of the test until tomorrow,’ viewed as part of the context in which the indicative mood modal ‘It’s possible that John has cancer’ is uttered, seems to exclude the results of the test and the doctor’s knowledge of them from the group relative to which the truth of the modal claim is evaluated. Likewise, the sentence ‘I’m going to find that out tomorrow when the results of the test are revealed’ in B seems to rule the results of the test into the group, explaining why Jane will not affirm that it’s possible that John has cancer. But, we can imagine these cases run with a much less talkative Jane who forgets to include such qualificatory information. In these cases, DeRose says, what Jane says will be ambiguous and Bill would be right to ask just what Jane meant. Perhaps if Jane was less talkative and Bill had already heard that a filtering test had been run on John he would ask “What do you mean John *may* have cancer? Do you have the results yet?” (DeRose, 1991, 593)

A final point worth noting is that the above discussion implicitly assumes that evaluations of utterances of indicative mood modal constructions are consistent, or alternatively that the truth value of these utterances are fixed by the context of utterance. Consider

¹³There are of course many other worries. For example, as discussed in section 3.2.1 and (von Fintel and Gillies, 2011), the project of fitting the data through the device of epistemic reach is a dubious one. Why is it within Fred’s friend’s epistemic reach to find out that the lottery is rigged, but not within the doting grandmother’s reach to find out the sex of the child? DeRose proposes because the one is “relevant” and the other not, but what justifies that claim other than that it gets the examples right? There are other questions about the notion of “epistemic reach” raised by Bach in (2011). For example, are truths implied by what is directly known by the group within the group’s epistemic reach? Surely at least some of them seem to be. What about memory? Is information members of the group have forgotten within the group’s epistemic reach? Although most in the literature set such questions aside, Michael Huemer is one contextualist who tries to sort through the consequences of cutting the basic contextualist scheme in different ways. (Huemer, 2007)

Moore’s example about Hitler. Assume that none of the infantry man’s compatriots know that Hitler is dead—but of course, those Germans in the bunker do. It is natural to say that the group relevant to the truth of the Russian infantry man’s utterance is the group of people involved in the conversation, or perhaps if the context was filled in more the Russian army itself. It certainly doesn’t seem right to include the Germans in the bunker. If this is correct, and assuming that the Russians do not know that Hitler is dead, the utterance (15) “Hitler may be alive” is true on the basic contextualist scheme. Hence anyone who evaluates the claim—including those Germans in the bunker who know that Hitler is dead—should evaluate it as true, if they evaluate it correctly. Or consider Cancer Test A. If Jane spoke truly in uttering (27), then anyone who evaluates her utterance correctly should evaluate it as true, including the doctor who knows that John does not have cancer.

2.1.5 Aside on Possible-World Semantics Much of the contemporary literature on epistemic modals in philosophy of language presupposes a possible-world semantics.¹⁴ The idea is that modals are generalized quantifiers Q over sets of “possible worlds” and that an utterance of a modal sentence with prejacent φ expresses a proposition $Q(\mathcal{B})(\varphi)$, where \mathcal{B} , called the **modal base**, is the set of possible worlds being quantified over. With the introduction of possible worlds the truth of an utterance becomes relativized to a possible world, since in general we will need to assume that the modal base \mathcal{B} associated with a sentence itself depends on a possible world of evaluation. (What is possible is not the same in every world.) Thus, assuming that the truth of φ itself only depends on the world of evaluation, the truth conditions for $Q(\mathcal{B})(\varphi)$ are given as follows.

$$(30) \llbracket Q(\mathcal{B})(\varphi) \rrbracket^w = \text{true} \text{ if and only if } \{w' \in \mathcal{B}(w) : \llbracket \varphi \rrbracket^{w'} = \text{true}\} \in Q(\mathcal{B}(w))$$

where, following the usual semantics for generalized quantifiers, $Q(\mathcal{B}(w))$ is some subset of $2^{\mathcal{B}(w)}$, the powerset of $\mathcal{B}(w)$. For example, ‘possible,’ ‘may’ and ‘permissible’ are associated with $Q = \exists$, in which case $\exists(\mathcal{B}(w)) = \{X \subseteq \mathcal{B}(w) : X \neq \emptyset\}$; while ‘necessary,’ ‘must’ and ‘ought’ are associated with $Q = \forall$, in which case $\forall(\mathcal{B}(w)) = \{\mathcal{B}(w)\}$.

¹⁴Most of this section—its examples, ideas, etc—is well known material drawn from the presentation in (von Fintel, 2006; von Fintel and Gillies, 2008a; Goldblatt, 2006). As von Fintel and Gillies report, these canonical semantics were first proposed by Kratzer (Kratzer, 1977; 1978; 1981; 1991) and based on the work of Kripke (1963) and Hintikka (1962).

If the basic contextualist scheme is to be fitted into this framework, then an utterance of a Moorean indicative mood modal will express some modal proposition $Q(\mathcal{B})(\varphi)$, where the modal base \mathcal{B} is the set of all possible worlds compatible with what is known to the group determined by the context of utterance. This presents two problems: first an additional parameter for a context of utterance must be added, and second a way of writing down “what is known to the group” in terms of a modal base must be found. For the first problem it is simply assumed that \mathcal{B} depends also on the context of utterance, c_U , i.e. $\mathcal{B} = \mathcal{B}(w, c_U)$. But, any given contextualist proposal for “what is known to the group” may present difficulties for writing down a modal base. For example, if G_c is the group picked out by context c and $f_x(w)$ is the set of worlds compatible with what x knows in world w , Moore’s condition (2.1.3.2) is naturally written down as

$$(31) \llbracket Q(\mathcal{B})(\varphi) \rrbracket^{w, c_U} = \text{true} \text{ if and only if } \forall x \in G_{c_U} : \exists w' \in f_x(w) \text{ s.t. } \llbracket \varphi \rrbracket^{w, c_U} = \text{true}$$

but there is no straightforward way to rewrite this in terms of a modal base \mathcal{B} .¹⁵ As von Fintel and Gillies describe in (2011), we can do a bit better, in any case, with Teller’s condition (2.1.3.8), which assuming that the prejacent itself is not a modal sentence can be safely written as

$$(32) \llbracket Q(\mathcal{B})(\varphi) \rrbracket^{w, c_U} = \text{true} \text{ if and only if } \exists w' \in \bigcap_{x \in G_{c_U}} f_x(w) \text{ s.t. } \llbracket \varphi \rrbracket^{w, c_U} = \text{true}$$

This suggests that $\mathcal{B}(w, c) = \bigcap_{x \in G_c} f_x(w)$, where G_c is the group picked out by the context c , is the modal base corresponding to Teller’s condition.

The project of giving formal semantics for Moorean utterances of indicative mood modals is not directly relevant though to the questions I wish to address here. As suggested above, it is unclear that all potential truth conditions fit into Kratzer’s general scheme (30). One could also deny that this sort of possible world semantics were even appropriate at all, and suggest instead that a dynamic update-based possible world semantics were better suited.¹⁶ Nevertheless this framework has three not wholly unrelated advantages. First it is convenient for expository purposes, second it allows for a unified treatment of modality and lastly it gives a convenient definition of modal *flavor*, i.e. for different types of possibility.¹⁷

¹⁵Here I’m borrowing the notation from (von Fintel and Gillies, 2011).

¹⁶Egan takes this approach in (2007), as do some working at Amsterdam on the topic.

¹⁷‘Flavor’ is the term used by von Fintel and Gillies.

Presumably Moorean utterances of indicative mood modals have been called “epistemic” because (it is thought) their truth conditions have something to do with what is known. Such modal utterances express something about what’s possible, given what is known. (The question in the literature has been: given what is known by whom?) Likewise, we say that an utterance of a modal sentence is “logical” or “alethic” when it’s truth conditions have something to do with consistency. Such modal utterances express something about what’s possible, given the laws of logic. The above framework gives us a way to put the matter: an utterance of a modal sentence that expresses a proposition $Q(\mathcal{B})(\varphi)$ is epistemic if and only if the modal base \mathcal{B} was picked out by the context as the set of worlds compatible with some epistemic state, or what is known.¹⁸ Likewise, if \mathcal{B} is picked out by the context of utterance as just those worlds consistent with the laws of logic, the utterance is alethic. If \mathcal{B} is picked out by the context as the set of just those worlds consistent with some set of rules or regulations, the utterance is deontic. In similar fashion we could define nomological, circumstantial, teleological and bouletic modals, among others. We then call this the **flavor** of the modal, or say that the modal expresses such-and-such type of possibility. If one likes collecting definitions, we could say,

Definition 2.1.5.1. *An utterance of a modal sentence which expresses $Q(\mathcal{B})(\varphi)$ is **epistemic** if and only if \mathcal{B} is picked out by the context of utterance as the set of worlds consisting of just those compatible with some epistemic state.*¹⁹

2.2 The Problem: Unresolvable Ambiguity and Inconsistent Evaluations

2.2.1 Examples The project at hand is the descriptive project of giving truth conditions for indicative mood modal constructions which account for their use—the conditions under which speakers will assert them, evaluate utterances of them as true, etc. The examples in 2.1.3 show that the device of “epistemic reach” is needed to fit the general contextualist scheme to the data. A recent slew of examples though suggest that not all

¹⁸Note the intentionality, it is not just that \mathcal{B} is a set of worlds which is compatible with some epistemic state, but rather we require that the context have specified \mathcal{B} intentionally by picking it out as the set of worlds compatible with some epistemic state. The former version would make the notion of epistemic modality trivial, since plausibly *every* set of worlds \mathcal{B} is the set of just those worlds compatible with *some* epistemic state.

¹⁹Presumably in some cases the sentence is explicit, e.g. “For all I know, Joe may be in Boston.” In this case we can just think of the restricting clause ‘For all I know’ as part of the context.

cases can be fit into the general scheme, even given this device. These examples fall into two main kinds: those involving unresolvable ambiguity from an indeterminate context and those involving inconsistent evaluations.

To see what is meant by an “unresolvable ambiguity,” consider the following example, based on one from John MacFarlane.

Example 2.2.1.1. The Boston Case A. (MacFarlane, 2011, 4–5) George, Sally and Ed are talking in the coffee line. Joe, another regular in the coffee line, is conspicuously absent today.

(33) Ed: I wonder where Joe is today.

(34) Sally: He may be in Boston.

(35) George: No, he can’t be in Boston. I just saw him an hour ago here in Berkeley. \square

With regard to fixing a modal base \mathcal{B} the context is indeterminate. (For example, Sally could have prefaced her utterance with ‘For all I know,’ fixing her own epistemic state.) The problem though is that there doesn’t seem to be any modal base \mathcal{B} that makes sense of all the responses. Consider the modal base associated with the group containing just Sally, call it \mathcal{B}_s . On this reading Sally’s utterance (34) would be true, and hence appropriate, but George would be wrong in denying Sally’s assertion. Not only would he be wrong, but his response would be inappropriate: George does not know what Sally knows, and so cannot judge the truth of (34). But, on any modal base associated with a group containing George, e.g. \mathcal{B}_g the worlds compatible with what George knows or \mathcal{B}_{g+s} the worlds compatible with what the group consisting of George and Sally knows, Sally’s utterance (34) is not only false, but seems inappropriate as well.²⁰ Just as in The Cancer Test example when Jane defers saying whether or not it’s possible that John has cancer because she does not know the result of the test (and hence doesn’t know \mathcal{B}), it seems that Sally too should defer until she knows what everyone else in the group relevant to \mathcal{B} knows. But both George and Sally’s assertions seem appropriate, so evidently not only is the context indeterminate, but there is no modal base \mathcal{B} which could resolve the ambiguity in (34) introduced by the contextual

²⁰It could be suggested that George and Sally do have a good idea about what the other knows, say if they were good friends. But since the same responses seem perfectly natural even if George and Sally do not have a good idea about what the other knows we are left with the same dilemma.

indeterminacy. That is, there seems to be several salient modal bases which are compatible with the context of utterance: \mathcal{B}_s , \mathcal{B}_g and \mathcal{B}_{g+s} . Sally's utterance (34) is ambiguous in the sense that any one of the following readings would be compatible with the context of utterance²¹

- $\exists(\mathcal{B}_s)(\text{Joe is in Boston})$
- $\exists(\mathcal{B}_g)(\text{Joe is in Boston})$
- $\exists(\mathcal{B}_{g+s})(\text{Joe is in Boston})$

This “ambiguity” is unresolvable in the sense that none of these readings makes sense of the conversation.

Although cases of unresolvable ambiguities provide one problem for the basic contextualist scheme, a closely related but perhaps more acute problem is the one caused by inconsistent evaluations. Both MacFarlane (2011, 4) and Egan (Egan, 2007, 2–3) motivate their relativistic semantics on such cases.²²

Example 2.2.1.2. The Boston Case B. (MacFarlane, 2011, 4–5) George, Sally and Ed are talking in the coffee line. Again Joe is conspicuously absent today, but none of them knows that Joe isn't in Boston.

(36) Ed: I wonder where Joe is today.

(37) Sally: He may be in Boston.

Now say that you were in the coffee line too and overheard the conversation. You think to yourself, “Joe can't be in Boston; I just saw him an hour ago here in Berkeley.” (Or rather ask yourself. You just saw that Joe is here in Berkeley and not in Boston. Did Sally speak falsely?) □

Example 2.2.1.3. Bond in Zurich. (Egan, 2007) James Bond recently infiltrated SPECTRE's secret base in the Swiss Alps, where he planted a bug in the conference room. (Earlier in the day he left persuasive but misleading evidence of his presence in Zurich.) Back at MI6 and monitoring the bug, Bond and Leiter overhear the following conversation.

²¹And, as I shall argue, there are a number of other readings which are compatible with the context some which having non-epistemic flavors.

²²MacFarlane calls these cases of third-party assessment.

(38) Number 2: Bond may be in Zurich.

(39) Blofeld: You're right, I want you to go and search for him.

But now imagine if Leiter, overhearing Number 2 utter (38), turned to Bond and said "That's right" or "That's right, you may be in Zurich." While Blofeld's reply seems appropriate, such a response from Leiter does not seem to be. \square

The idea in The Boston Case B is that when you think to yourself, "Joe can't be in Boston; I just saw him an hour ago here in Berkeley," it is an appropriate thought or reaction to Sally's utterance (37), given your knowledge that Joe isn't in Boston. Likewise, although it may be stilted, it would be appropriate or justified for Leiter, upon overhearing Number 2 utter (38), to say "That's false." Indeed, the point was to mislead Number 2 and Blofeld so they wrongly thought that Bond might be in Zurich. But also note that just as Blofeld's response in the Bond in Zurich example is appropriate, so an affirmation of Sally's utterance (37) by George or Ed would be as well. Thus three problems arise. First, ignoring the implausibility that the context of Number 2's utterance picks out Leiter as part of the group relevant to the modal base \mathcal{B} of (38), both Number 2's utterance (38) and Leiter's response that (38) is false seem appropriate, and hence we generate the same unresolvable ambiguity that we saw in The Boston Case A. Second, each of (38), Blofeld's response and Leiter's response are appropriate, but Blofeld and Leiter seem to be *disagreeing* with each other. Third, there does not seem to be a consistent standard of evaluation in the Bond in Zurich example. Both Blofeld and Leiter, most plausibly, are evaluating Number 2's utterance (38) based on their own knowledge and not based on some common epistemic state fixed by the context.

These last two points are important. Unresolvable ambiguity is a problem for contextualism because in these cases there apparently is no epistemic state for the context to pick out. But cases where there is also inconsistent evaluations provide a further difficulty. To see the difficulty consider one way the contextualist could respond to the The Boston Case A. One could suggest that Sally's utterance (34) and George's response (35) are actually affirming and denying different propositions. Sally, essentially, is affirming the proposition $\exists(\mathcal{B}_s)(\text{Joe is in Boston})$ while George is denying $\exists(\mathcal{B}_g)(\text{Joe is in Boston})$. But

in The Boston Case B and the Bond in Zurich example it feels as if there is disagreement between the kibitzer's evaluation and the conversation partner's evaluation.²³ Presumably they are disagreeing over the truth value of the proposition expressed by the speaker. If the contextualist tries to avoid the problem in these cases by positing that the kibitzer and conversation partners are evaluating different claims then the disagreement is lost. Part of accounting for inconsistent evaluation cases is accounting for the feeling of disagreement, and the contextualist move to deal with simple cases of unresolvable ambiguity will fail to account for this disagreement when the case of unresolvable ambiguity also involves inconsistent evaluations.²⁴

It seems that exactly analogous remarks can be made for The Boston Case B. The essential feature that these cases show is that people often seem to evaluate utterances of Moorean indicative mood modals based on their own knowledge, not based on some epistemic state picked out by the context of utterance.

In explicating the problem for contextualism caused by the above examples certain utterances were characterized as "appropriate." For example, in The Boston Case A both Sally's utterance "He may be in Boston" and George's reply "No, he can't be in Boston" were called appropriate. What I mean when I say that an utterance is **appropriate** is that it is something that a *competent* speaker *could* say. An utterance, in the context of a conversation, would be **inappropriate**, in this sense, if the utterance suggests that the utterer is linguistically incompetent, i.e. does not understand what has been said.²⁵

²³Of course, there also seems to be some disagreement in The Boston Case A if we assume that Sally and George are in fact talking about the same proposition, since Sally evaluates her own claim as true, presumably. Pushing the issue of disagreement off until the Kibitzer cases, I hope, is a rhetorical move which makes the problem more salient: presumably both the conversation partner and kibitzer are evaluating the same proposition, namely the one expressed by the speaker's utterance. The point just is that we can get inconsistent evaluations in examples without kibitzers, but kibitzers seem to provide clear cases of inconsistent evaluations.

²⁴It seems that Michael Huemer, a contemporary contextualist who advocates for a position more or less in line with Hacking et al., tries to deal with unresolvable ambiguity in just this way. He sets out an example with unresolvable ambiguity and points out that there is no epistemic modal base which makes sense of all the utterances and saves the disagreement. He seems to conclude that there really isn't any disagreement, or that the third-party evaluator cannot correctly evaluate what the speaker said as false. (Huemer, 2007, 137–140) The problem with this response is just that it ignores the data. These cases are supposed to be so difficult precisely because there's no epistemic modal base which makes sense of the responses and saves the disagreement, but it seems like there is disagreement. The third-party evaluator really can, in full linguistic competence, deny what the speaker said.

²⁵Often times I will refer to the evaluation expressed by an utterance itself as appropriate or inappropriate according to whether or not the utterance itself was appropriate or inappropriate.

For example, saying “No, there’s a chance he isn’t in Boston” would be an inappropriate response to “Joe may be in Boston.” Such a response clearly shows a misunderstanding of the word ‘may.’ Appropriate things can sound unnatural. This will happen when someone says something appropriate but unpragmatic, something which is permissible but which fails to advance the conversation.²⁶ It should be noted that whether or not an utterance is appropriate is a matter of linguistic intuition: for example, judging the appropriateness of George’s reply to Sally in The Boston Case A involves an intuition about whether he can say what he does and still be counted a competent speaker or as understanding what was said.

The point just is that someone can say something quirky or out of place without displaying a lack of linguistic understanding, while someone can also speak correctly or with semantic competence while being quirky. Saying something appropriate but unnatural is to be “nit-picky,” “difficult” or an uncoöperative conversation partner. The distinction is important because when considering examples such The Boston Cases what is important is that the utterances—both the original assertion and the responses—be appropriate, even if unnatural. The goal, after all, is a *semantic* theory and not a pragmatic one.

2.2.2 Responses to the Examples There have been various responses to the cases which take the above examples more or less at face value and reject the basic contextualist scheme. The main response is the one proposed by MacFarlane and Egan, usually dubbed **relativism**. (MacFarlane, 2011; Egan, 2007; Egan et al., 2005; Stephenson, 2007) The relativist proposal, in rough form, is that we should take seriously the observation that there seems to be different standards of evaluation operative in the examples. Sally utters (37), George evaluates it with respect to what he knows and comes up with “true!” while you, the kibitzer, evaluate it with respect to what you know and come up with “false!” A natural suggestion is that Sally’s utterance (37) itself is true or false relative to a context of evaluation. Alternatively but equivalently we could say that the sentence ‘Joe may be in Boston’ is true or false not relative to a context of utterance, but instead relative to a context

²⁶Casey O’Callaghan suggested this way putting the concept of appropriateness to me. Others in the contemporary literature use the adjective ‘appropriate’ to describe utterances. (Egan, 2007; MacFarlane, 2011) It is unclear whether they have in mind the same sense of appropriateness I do. Egan and MacFarlane take appropriateness to be something which usually only holds of utterances in the case when the utterer has good reasons to believe that the utterance is true. This much anyway seems to accord with my usage.

of evaluation. For the relativist, ‘Joe may be in Boston’ has the form $\exists(\mathcal{B})(\text{Joe is in Boston})$, but where the contextualist contends that the modal base \mathcal{B} is a function of worlds and contexts of utterance, i.e. $\mathcal{B} = \mathcal{B}(w, c_U)$, the relativist contends that the modal base \mathcal{B} is a function of worlds and contexts of *evaluation*, i.e. $\mathcal{B} = \mathcal{B}(w, c_E)$.²⁷ When Sally utters “Joe may be in Boston” what she is expressing is a modal claim the truth of which is relative to the person who evaluates it. Sally is justified in making the claim because, relative to her, it is true. You the kibitzer are justified in denying the claim because, relative to you, it is false. There is still disagreement, the relativist says, because you and Sally are evaluating the same claim as having different truth values, it just so happens that the claim you are evaluating is an evaluation-relative one. As MacFarlane says, “On the relativist’s account, epistemic modal claims aren’t equivalent to any claims about what people know. The former are assessment-sensitive, and the latter are not. The relativist can say that every group that is debating whether it is possible that infected birds have entered Alameda county (by such and such a date) is debating the truth of the same proposition. It’s just that the truth of this proposition is perspectival.” (2011, 23)

There have been a number of criticisms of the relativist account. The most complete is (von Fintel and Gillies, 2008b), a few others can be found in (Hawthorne, 2007). The relativist position is so prominent that most articles in the literature not supporting it devote a few lines to criticism. I will only discuss here what I see as the two most salient criticisms, leaving most others aside. The first is discussed below in section 2.2.3. The simple relativist proposal is something like, if $Q(\mathcal{B})(\varphi)$ is a Moorean indicative mood modal uttered in some context, then the modal base \mathcal{B} is the set of worlds compatible with what is known by the person evaluating the utterance. The problem is that people don’t always evaluate utterances of Moorean indicative mood modals based on what they know. Not every utterance is open to appropriate, problematic evaluations. So the relativist has to complicate their story and say that sometimes, in fact, “epistemic modal” claims aren’t relative after all.

²⁷Of course, the full semantics will be a bit more complicated since obviously the context of utterance will still be relevant when there are other contextual dependencies. For example, it seems that the world w will be determined by the context of utterance. MacFarlane in (2011), section 6.3, gives a definition for “An occurrence of a sentence Φ at a context c_U is true as assessed from a context c_A iff ...”

A bigger problem though is the relativist story about disagreement. There is disagreement between George's evaluation and the kibitzer's evaluation in the Boston Case B. George is denying Sally's claim in The Boston Case B. The disagreement comes in, according to the relativist, because although the *proposition* put forward by Sally is one that is true or false relative to a context of evaluation, it still is the *same* proposition which George accepts and the kibitzer denies. MacFarlane, in (2007), lays out in detail just how this sort of disagreement is supposed to work. MacFarlane's approach, essentially, is to take disagreement as something which happens over propositions, i.e. when two people disagree they disagree over a proposition. Naively we could say that two people disagree over a proposition just in case one accepts it and the other rejects it. (MacFarlane, 2007, 22) Following Kaplan, MacFarlane sees propositions as potentially having contextual dependencies and these dependencies cause problems for the naive account. For example, I may now accept the proposition that I'm sitting down but in five minutes reject that I'm sitting down. Nevertheless in five minutes I wouldn't be disagreeing with my past self. MacFarlane's project in (2007) is to sketch out a path towards a general theory of propositional disagreement which lets in disagreement over evaluation-relative propositions of the sort he thinks is expressed when Sally says, "Joe may be in Boston."

My complaint is that this is not, intuitively, what disagreement is. Disagreement, if it is genuine disagreement, is disagreement over the assignment of truth values *at fully specified points of evaluation*.²⁸ The truth value of a sentence φ , $\llbracket \varphi \rrbracket$, depends on some parameters p_1, \dots, p_n . For example, assuming φ itself has no additional dependencies, the contextualist says that the truth of $Q(\mathcal{B})(\varphi)$ depends on $p_1 = w$ a world of evaluation and $p_2 = c_U$ a context of utterance. What can be disagreed over, on this view, is the value $\llbracket Q(\mathcal{B})(\varphi) \rrbracket^{w, c_U}$. If you say $\llbracket Q(\mathcal{B})(\varphi) \rrbracket^{w, c_U} = \text{true}$ and I say $\llbracket Q(\mathcal{B})(\varphi) \rrbracket^{w, c_U} = \text{false}$ we disagree. What there is to disagree over then, it seems, is the truth value of sentences at fully specified points of evaluation.

This is just what the relativist does not have. On the simple picture, the relativist says that the truth of $Q(\mathcal{B})(\varphi)$ is relative to a point of evaluation (w, c_E) . What it would take

²⁸Of course, if one thinks, unlike Kaplan or MacFarlane, that propositions are things that have determinate truth values then a story about propositional disagreement will line up with what I say here.

for disagreement, then, is for one person to say $\llbracket Q(\mathcal{B})(\varphi) \rrbracket^{w, c_E} = \text{true}$ and another to say $\llbracket Q(\mathcal{B})(\varphi) \rrbracket^{w, c_E} = \text{false}$ *for the same point of evaluation* (w, c_E) . What the relativist has instead in The Boston Case B, for example, is that George says $\llbracket \exists(\mathcal{B})(\text{Joe is in Boston}) \rrbracket^{w, c_g} = \text{true}$ and the kibitzer says $\llbracket \exists(\mathcal{B})(\text{Joe is in Boston}) \rrbracket^{w, c_k} = \text{false}$. That George and the kibitzer are evaluating $\exists(\mathcal{B})(\text{Joe is in Boston})$ against *different* points of evaluation “shields” them from genuine disagreement. So it seems then that the relativist hasn’t saved the disagreement.²⁹

A second response to the examples, what MacFarlane calls **cloudy contextualism**, is offered by von Fintel and Gillies in (2011). Their proposal is to focus on the indeterminacy of the context of utterance. They point out that in The Boston Case A there are a number of ways to resolve the modal base, i.e. with \mathcal{B}_s , \mathcal{B}_g or \mathcal{B}_{g+s} . Their proposal is that the apparent ambiguity described above is there “by design.” Sally’s utterance (34) in the indeterminate context actually is ambiguous in some sense. The seeming inability to resolve the ambiguity is because it cannot be resolved: Sally’s utterance is genuinely ambiguous. Von Fintel and Gillies talk about Sally “putting a proposition into play.” Sally utters “Joe may be in Boston” in some context c_U which fails to determine an epistemic modal base \mathcal{B} . The facts up until the time of utterance allow for the context c_U to be resolved in multiple ways, each way determining some group G which fixes an epistemic modal base \mathcal{B} . Then we say that the utterance “puts into play” all of the modal propositions $\exists(\mathcal{B}_i)(\text{Joe is in Boston})$ where \mathcal{B}_i is a modal base associated with some group G_i picked out by one of the resolutions of c_U , i.e. \mathcal{B}_s , \mathcal{B}_g and \mathcal{B}_{g+s} . (von Fintel and Gillies, 2011, 17)

Von Fintel and Gillies then develop the pragmatics of such ambiguous utterances in a way which accounts for the data. They define when a speaker is justified in making an utterance so that if the utterance puts into play the propositions $Q(\mathcal{B}_i)(\varphi)$ for $i = 1, 2, \dots, n$, then a speaker is justified in making the utterance just in case they are justified in asserting at least one of the propositions put into play. (2011, 18) This explains in The Boston

²⁹One way to respond to this objection is that I’ve only described one sort of disagreement—disagreement over the assignment of truth values at fully specified points of evaluation—but that there can be other sorts of disagreement, for example the sort of propositional disagreement sketched by MacFarlane. Even granting that it’s hasty to privilege one sort of disagreement as “genuine,” I suggest that admitting other sorts of disagreement is no help to the relativist. It seems that the appropriate sense of disagreement *in these cases* is disagreement over the assignment of truth values at fully specified points of evaluation.

Case A why Sally is justified in uttering (34), since one of the propositions put into play is $\exists(\mathcal{B}_s)(\text{Joe is in Boston})$ and she is justified in asserting this proposition. To account for George's evaluation, they suggest that the hearer can justifiably confirm (deny) the utterance just in case the strongest proposition put into play by the utterance which he justifiably has an opinion about he thinks is true (false). (2011, 19) The disagreement between Sally and George is genuine because there is a proposition put into play by Sally, $\exists(\mathcal{B}_g)(\text{Joe is in Boston})$ or $\exists(\mathcal{B}_{g+s})(\text{Joe is in Boston})$, which George is explicitly denying.

The primary criticism I have of “cloudy contextualism,” which is very close to the view I put forward in section 3.2.3, is that it has trouble handling evaluations by kibitzers. The idea is that in The Boston Case A the context allows for Sally's utterance to be resolved with a number of modal bases: \mathcal{B}_s , \mathcal{B}_g or \mathcal{B}_{g+s} . These modal bases seem like reasonable resolutions because they involve the epistemic states of people involved in the conversation. The problem is that in order to account for the evaluations of kibitzers like in The Boston Case B we have to also suppose that the context leaves open many more resolutions, resolutions which include the epistemic states of potential eavesdroppers. They justify this claim by suggesting that the context actually leaves open all those resolutions involving the epistemic states of people involved in the same investigation. They say, “So, how can Alex's BEM [bare epistemic modal] have a reading where its claim hinges (partly) on what Chuck [the kibitzer] knows? Simple: imagine that what makes someone part of a relevant group for a BEM is that they are engaged (in some sense) in the same investigation as the overt partners in the conversation.” (von Fintel and Gillies, 2011, 27) The charge here is simply that this is asking us to imagine too much. It seems reasonable to imagine that the context of utterance in The Boston Case B can be resolved with a modal base including what's known to a person in the conversation. It's more difficult to imagine that a salient resolution of the context is a modal base which includes the epistemic state of arbitrary eavesdroppers.³⁰

³⁰Another criticism of cloudy contextualism is its account of the felt disagreement. While the cloudy contextualist can say that the third-party is directly evaluating as false a proposition “put into play” by the speaker, it's unclear whether merely putting into play, as opposed to explicitly evaluating as true, is enough to generate genuine disagreement. Of course, the cloudy contextualist could pull back and suggest that there isn't really genuine disagreement and simply offer their story as an explanation for the appearance of disagreement.

A third response to the examples, standard in descriptive and typological linguistics, is **expressivism**. This proposal treats the modal term in indicative mood modal utterances which express the reading of interest as “an expression of the speaker’s attitude towards the prejacent proposition, rather than giving rise to a complex proposition with its own distinct content.” (von Fintel and Gillies, 2008a, 41) Some contemporary philosophers who support it include Hare (1967), Price (1983) and Swanson (2006). On this proposal the exchanges are easy to understand. In uttering (34) Sally says something about her attitude towards ‘Joe is in Boston,’ perhaps noting that she is unwilling to say that Joe isn’t in Boston or signaling that George shouldn’t overlook the possibility.³¹ If she is putting forward a proposition at all it is that Joe is in Boston. George, knowing that this is false, denies it. The well-known objection to this position is that it has difficulty describing what happens when Moorean indicative mood modals are embedded under other modals.³² Perhaps the primary concern with expressivism though, related to issues of embeddings, is that it trivializes the modality. Intuitively it seems like Sally can truly say “Joe may be in Boston” in some cases where he is not in Boston. But on the expressivist story she cannot. Sally’s utterance will be true just in case Joe actually is in Boston.

A last response needing comment is John Hawthorne’s. His view, developed in (2007), is much like the one I will advocate for below. His essential idea is that there is a distinct, non-epistemic reading of the problematic utterances, a “danger” reading. To say “Joe may be in Boston” on this reading is to express that there is a danger of Joe being in Boston. There being of a danger of something, for Hawthorne, is an objective matter. Hawthorne cashes the notion out in terms of close possible worlds: “Let a case be a centred world (in Lewis’ sense). Let us suppose some cases are close to a given case. X is at t1 in danger of F-ing at t2 iff some centred worlds that are close to the actual case centred on X at t1 are worlds where X Fs at t2.” (2007, 97) Hawthorne explains his position as follows.

I propose that ‘might’ claims sometimes have a purely epistemic use—ones that are merely tied to the knowledge set of the agent (or perhaps agent plus interlocutors), and a more objective—‘danger’—use, that has no straightforward

³¹MacFarlane, in (2011, 16), notes that Hare, in (1967, 321), suggests the former, while Fintel and Gillies, in (2008a, 42), note that Swanson, in (2006), suggests the latter.

³²See (MacFarlane, 2011) and (von Fintel and Gillies, 2008a, 42) for an overview of the problem.

analysis in terms of bodies of knowledge. It may be that no individual at a world knows that a certain chair is in fact a long way from the edge of the cliff and hence the sum total of what everyone in the world knows leaves it open that the chair will fall off the cliff. But still, the claim ‘There is no danger of the chair falling over’ is true in the mouth of individuals at that world. ...

Back to the eavesdropping data. Someone says one Sunday morning ‘Susan might be in the local grocery store’. The account predicts that if the purely epistemic use is at work we won’t react with a ‘False!’ verdict. Suppose the speech was continued in a way that made it look purely epistemic. Suppose the person continued ‘Granted, she may have moved out of town. But she may still be around here. Really I have no idea. So she *may* be in the grocery store’ I think the eavesdropper would not be inclined to contest of the elements of this speech. But the account I have proposed also predicts a use which is more or less tantamount to ‘There is a danger that Susan is in the grocery store’. Here the truth conditions are not given by what the speaker knows, nor even by what some larger community knows. It turns on whether there is a relevantly similar situation to the actual world where Susan is in the grocery store. (Hawthorne, 2007, 98–99)

Several features of Hawthorne’s account are nice. Like von Fintel and Gillies, Hawthorne suggests that there is some sort of ambiguity at play in the problematic cases. Or at least, he suggests that there are alternative readings of the utterances: one epistemic, one the danger reading. Hawthorne also suggests, as I do below in section 3.2.2, that when the context of utterance makes clear that it is the epistemic reading in play eavesdroppers are not prone to making problematic evaluations.

Given the similarities between Hawthorne’s account and the one I develop below, one might ask what the differences are. The difference is that while it seems that the danger use of modals is one sort of circumstantial reading, i.e. *given the circumstances such-and-such unwanted consequence may happen*, not every circumstantial modal is a danger use. First, danger uses seem to be future directed. Second, danger uses seem to focus on unwanted consequences. Many of the problematic examples don’t seem to involve either of these elements. When Sally utters “Joe may be in Boston” in The Boston Case A she is not making a future directed claim, nor does there seem to be an element of danger.³³

³³In the end it might be that Hawthorne’s danger theoretic sense is not just one type of circumstantial modality, as I’ve laid out the notion. Hawthorne’s danger theoretic sense plays on David Lewis’s notion of chance and there might not be a way to translate there being a chance of something (in Lewis’s sense) in terms of the circumstances allowing for it (in my sense). Another way in which my account differs from Hawthorne’s is the way in which it’s motivated. I take it that the arguments of section 3 are substantially different from Hawthorne’s motivation.

2.2.3 Comments on the Examples Of course if the examples are not taken at face value there are ways to save the basic contextualist scheme. One way for the contextualist to respond is simply to reject the data. One could object that The Boston Cases (2.2.1.1 and 2.2.1.2) and the Bond in Zurich example (2.2.1.3) do not represent how people use indicative mood modal constructions. Perhaps in The Boston Case A it would not be natural, appropriate or correct for George, knowing that Joe is not in Boston, to reply with (35) to Sally's utterance (34), or perhaps in the The Boston Case B you, the kibitzer, would not react in the way described, or at least would be misunderstanding what was said if you did so. (If this were the case, then there simply would be no evaluations which caused an problems and there would be some epistemic state which resolved the ambiguity.) But even if one grants that the data is correct, the contextualist could say that the problematic utterances—George's utterance (35) and the kibitzers's responses—are not denials of the modal claims (34), (37) and (38), but rather denials of their prejacent. (Thus there really wouldn't be any disagreement, although perhaps the evaluator would be "disagreeing" with the speaker in the sense of rejecting the prejacent.) Perhaps, in The Boston Case A, when George says "No" he is actually denying the proposition that Joe is in Boston and not the modal proposition expressed by Sally's utterance (34).

The first response does not seem very plausible in The Boston Case A. First it sure *seems* like a natural way for George, knowing what he does, to reply. But is George's denial of Sally's claim appropriate or correct? MacFarlane suggests the following argument for both in (2011, 5–6). If George in (35) has inappropriately (or incorrectly) evaluated Sally's utterance (34) as false, then it seems that Sally should be able to stand by and defend her claim. More specifically, a response from Sally to George's correction which defends her claim should be appropriate. Although MacFarlane suggests this test, what he actually seems to propose is a bit different. He doesn't suggest that Sally's response to correction be *appropriate*, but rather that it be a natural thing to say. This suggestion is suspect. It seems that what is natural for Sally to do at this point is just as much driven by pragmatics as it is semantics. What we really want to know, for example, isn't whether conversation pragmatics allow for Sally to stand by her claim, but rather whether *what is said* allows

Sally to stand by her claim—a matter of appropriateness.³⁴ In any case, consider how it sounds for Sally to defend her claim:

Sally: Joe may be in Boston.

George: No, he can't be in Boston. I just saw him an hour ago here in Berkeley.

Sally: Okay, then, he can't be in Boston. But I still stand by what I said a second ago.

MacFarlane suggests that this response sounds terrible, and indeed it does. We may say that it sounds inappropriate, even.³⁵ To support this, contrast how that response sounds compared to how it sounds for Sally to retract her claim:

Sally: Joe may be in Boston.

George: No, he can't be in Boston. I just saw him an hour ago here in Berkeley.

Sally: Okay, then, scratch that. I was wrong.

It sounds more appropriate for Sally to retract her claim, which suggests that George has correctly evaluated Sally's utterance (34) as false. MacFarlane suggests that this same linguistic data would be just as robust in The Boston Case B, where this time the correction comes not from a conversation partner but from you, the kibitzer. Imagine if you jumped into the conversation with "No, he can't be in Boston. I just saw him an hour ago here in Berkeley." It still sounds bad for Sally to reply, "Okay, then, he can't be in Boston. But I still stand by what I said a second ago" and more appropriate for her to retract.

The second response faces at least three problems. The first is suggested by von Fintel and Gillies in (2011). Consider The Boston Case A. If (35) is only denying the prejacent of (34) and not the modal claim itself, then plausibly the case where George does not know that Joe cannot be in Boston and replies to (34) with "Yeah, that's right" is similarly a case where George is affirming the prejacent and not the modal claim itself. But this is impossible, since by assumption in this case George does not know whether Joe is in Boston,

³⁴It should be kept in mind that defending the original assertion is different from reasserting it. Perhaps, whatever Sally said when she uttered "He may be in Boston" was true when she said it, but would be false if she tried to assert it again after George has informed the group that Joe isn't in Boston. Also, as MacFarlane points out, defending her original claim as assertable is different from defending it as true. What we are interested in is whether Sally can defend her original assertion as true (without necessarily reasserting it.)

³⁵Admittedly differentiating between whether Sally's response is inappropriate or just unnatural is difficult, but I believe that the distinction must be made if the argument is to say anything about the semantics as opposed to the pragmatics.

so he can't appropriately affirm the prejacent. It just seems that if a response of "No" to (34) is a denial of the prejacent, then the corresponding response of "Yes" should be an affirmation of the prejacent—but it's not.

The second problem is suggested by MacFarlane and comes from a contrast case. (MacFarlane, 2011, 4–5) Consider another modal claim where the denial really is aimed at just the prejacent.

Sally: It's rumored that you are leaving California.

George: That's completely false!

It seems clear that in this case George is not denying that such-and-such was rumored, but instead denying that he's leaving California. Imagine if Sally asked, "You mean that it's rumored, or that you're leaving?" Unusual circumstances aside, George would naturally reply, "That I'm leaving, of course." But contrast this to The Boston Case A. In contrast to the example just given, it sounds like George is denying Sally's whole claim in The Boston Case A, and if asked just what he was denying he would probably say he's denying that it's possible Joe is in Boston. Again the same two considerations are supposed to show that it is also the whole modal claim that is being denied in the kibitzer cases.

The third problem is most salient in inconsistent evaluation cases where there is a strong feeling of disagreement. In the Bond example it feels like Leiter and Blofeld are disagreeing when Leiter says "That's false" and Blofeld says "That's true." If Leiter really just meant that the prejacent of Number 2's utterance (38)—'Bond is in Zurich'—is false, then he isn't disagreeing with Blofeld who is affirming the modal claim asserted by (38). While a story saving the feeling of disagreement could be told, this second response will only be successful if the feeling of disagreement can be saved.

So much for rejecting the examples at face value, at least in the case when (i) the "problematic" evaluations are appropriate and (ii) there is a feeling of disagreement between what is asserted by the speaker and what is asserted by the "problematic" evaluation. It is important to note though, as von Fintel and Gillies do, that intuitions vary on whether or not George can appropriately respond the way he does to Sally in The Boston Case A. It is MacFarlane's argument from retraction which presents persuasive evidence for the

appropriateness of George's reply. If Sally can appropriately defend her original claim then it seems as if something has gone wrong with George's evaluation—he did not understand Sally's claim. This is important because I take the ability to force retractions—or at least prevent the speaker from standing by their original claim—as the best evidence for the appropriateness of the “problematic” evaluations.

It should be noted that those like MacFarlane and Egan who advance the above examples against contextualism do not see these as isolated cases. MacFarlane goes so far as to suggest at some places that people always evaluate the truth of a Moorean utterance of an indicative mood modal against their own knowledge. (2011, 8–10) (At other places he backs off from this claim.³⁶) Certainly the simplest forms of relativism and expressivism about “epistemic modals” suggest as much. But it seems clear that such a radical claim is false, as there are a number of counterexamples. Consider Hacking's lottery cases (2.1.3.4). Someone looking back at the friend's utterance (19) who knows that Fred did not win the lottery does not evaluate (19) as false. In hindsight (19) still seems true; Fred may have won the lottery. Another example is John Hawthorne's Suzy-on-the-bus example.

Example 2.2.3.1. Suzy-on-the-Bus. (Hawthorne, 2007) Suzy, who hates John, gets on a bus and hides. John isn't on the bus, but his friend is. Perplexed at Suzy's hiding, John's friend calls John.

(40) John's friend: Why is Suzy hiding on the bus?

(41) John: Suzy is hiding because I may be on the bus.

(42) John's friend: Oh, something happen between you two?

(43) John: No, she still owes me 100 bucks.

Both John and his friend, of course, know that John isn't on the bus. Nevertheless both John and his friend take (41) to be true. John can appropriately offer that he may be on the bus as an explanation of Suzy's hiding. □

Further, von Fintel and Gillies point out that the argument from retraction used to show that George did evaluate appropriately (and correctly) Sally's utterance in The Boston Case

³⁶See his unpublished article “Epistemic Modals: Relativism vs. Cloudy Contextualism” presented at the Chambers Philosophy Conference on Epistemic Modals, University of Nebraska April 16th, 2010.

A does not always work. Consider the following example given by them. (von Fintel and Gillies, 2008b, 81)

Example 2.2.3.2. The Missing Car Keys. Billy has lost his keys. He walks into the kitchen and sees Alex.

(44) Alex: The keys may be in the drawer.

(45) Billy: (*Looks in the drawer, agitated.*) They're not. Why did you say that?

(46) Alex: Look, I didn't say they *were* in the drawer. I said they *may be* there—and they might have been. Sheesh. □

The point of the example, as von Fintel and Gillies describe, is that speakers can often resist the push for a retraction and can even stand by what they say. Von Fintel and Gillies describe a number of other examples where speakers can resist the push for retraction, but one sort of example not given by them is of a particularly important kind. Consider The Cancer Test A example. Imagine if the doctor overheard Jane say (27)—that it's possible John has cancer. In the example the doctor knows that John does not have cancer. Imagine him jumping into the conversation:

Jane: It's possible that John has cancer. He has some of the symptoms. But it's by no means certain that he's got it. They've run a test on him which may rule cancer out, but they won't tell us the results of the test until tomorrow.

The doctor: It's impossible that John has cancer, I have the test results right in front of me!

Jane: Excuse me, but I was obviously referring to what was known *before* the test.

In this case Jane resists the push for a retraction, but she resists it by referring back to the bit of context which seemed to fix the group of people relevant to the modal claim. Of course, it may be objected that Jane's reply "Excuse me, but ..." is an awkward or unnatural thing to say. (After all, given the topic of discussion we expect Jane to jump up and express relief at the fact that her husband does not have cancer!) But recall that the question is not whether it is natural for Jane to stand by her assertion, but whether it is appropriate in the sense that it is something within the bounds of semantic meaning to say. Here I suggest that, in contrast to Sally's response "Okay, then, he can't be in Boston.

But I still stand by what I said a second ago” to correction in The Boston Case A, this response by Jane is appropriate. The difference is the reference to tests provided by the context—Jane’s original utterance sets up a context which picks out a certain epistemic state as the modal base and her reply to the doctor is within the bounds of this meaning. As I argue later in section 3.2.2, these cases where the speaker resists retracting by referring back to the context are important in understanding Moorean indicative mood modals.

With that said, even if there are examples of Moorean indicative mood modals that are not open to problematic evaluations there does seem to be examples of ones that are. I take The Boston Cases (2.2.1.1 and 2.2.1.2) and The Bond in Zurich example (2.2.1.3) to be as good of cases of problematic evaluations as any. Most who disagree can probably construct their own examples. This point is important, for even if examples like the lottery, bus and cancer cases are problematic for simple versions of relativism, cases like the Boston ones are problematic for contextualism.³⁷

Just above I referred to examples like The Boston Cases and Bond in Zurich as cases where the indicative mood modal is open to “problematic evaluations.” The following definition attempts to make this idea a bit more precise.

Definition 2.2.3.3. *An evaluation of (or reply to) a Moorean utterance of an indicative mood modal is **problematic** if and only if there is no modal base \mathcal{B} such that if the original Moorean utterance expressed $Q(\mathcal{B})(\varphi)$ both it and the evaluation would be appropriate.*

Thus we can say that an indeterminacy in the context of utterance of a Moorean indicative mood modal is **unresolvable** if that utterance is open to problematic evaluations. (Conjecture: an utterance whose context is not indeterminate with respect to a modal base is not open to appropriate problematic evaluations.) The standard way to avoid a problematic evaluation in any given case is to argue that the evaluation isn’t appropriate in the first place—and thus that there shouldn’t be a modal base which makes sense of both the original utterance and evaluation. The standard objection to this move is to argue that it is inappropriate for the speaker to stand by their claim. The second approach to avoiding

³⁷There are a number of other issues related to the data on these sorts of problematic cases which will not be discussed here. Some of these are raised in (von Fintel and Gillies, 2011) and (von Fintel and Gillies, 2008b).

a problematic evaluation is to claim that what is being expressed by the utterance isn't in fact an evaluation, e.g. George is commenting on the modal claim associated with what he knows, or simply targeting the prejacent of Sally's utterance. This move is blocked when we have a case of disagreement.

Definition 2.2.3.4. *An example involving an utterance of a Moorean indicative mood modal is a **problematic example** if and only if the utterance is open to a problematic evaluation which would be appropriate.*

Thus all problematic examples involve Moorean utterances which are open to problematic evaluations, but not all examples involving Moorean utterances and problematic evaluations are themselves problematic since the problematic evaluation in the example may itself not be appropriate. But, all examples involving Moorean utterances and problematic evaluations where a retraction is forced are problematic by the argument above. (Conjecture: every example which is problematic is a case where a retraction can be forced.) Of course, not all problematic examples are really "problematic," since presumably there are problematic examples where the problematic evaluation really isn't an evaluation of the original utterance but instead targets the prejacent. Thus the topic for discussion is problematic examples where there is felt disagreement between the original utterance and the problematic evaluation. Hereafter I shall only talk of problematic examples where there is felt disagreement, since the other sorts aren't really problematic for anyone.

It is not unreasonable to say that problematic examples in the sense of definition 2.2.3.4, in one guise or another, have been *the* problem in the contemporary literature on "epistemic modals." The reason problematic evaluations (in genuine problematic examples, i.e. those where a retraction can be forced) of Moorean indicative mood modals are *problematic* is that, assuming they do express epistemic modal propositions, there does not seem to be an epistemic modal base over which the modal could quantify. A simple suggestion is that Moorean utterances of indicative mood modals which are open to problematic evaluations, contra the canon and contemporary discussions, do not express epistemic modal propositions. That is, anyway, the most straightforward conclusion to draw. In the next section (3) I develop this idea further, first showing that there is little by way of argument for

the claim that Moorean utterances of indicative mood modals in problematic examples express epistemic modality, and then showing (i) that the problematic cases can be explained on a non-epistemic reading of the Moorean utterance and (ii) that cases where the utterance is epistemic and where a retraction can be forced are cases where the context is not indeterminate with respect to a modal base, and hence are not problematic.

3 Problematic Evaluations and Epistemic Modality

John Hawthorne’s article (2007) is the only article in the contemporary literature to suggest that problematic cases of Moorean indicative mood modals are cases where the utterance does not express epistemic modality. The way in which most of the contemporary literature on “epistemic modals” approaches the topic seems to exclude non-epistemic readings. In the classical literature by Hacking et al. ‘epistemic modal’ is a grammatical sortal; the object of study is something like Moorean indicative mood modals, and arguments are required to show that utterances of such sentences express epistemic modality (in the sense of definition 2.1.5.1.) But in much of the contemporary literature ‘epistemic modal’ is a semantic sortal; the object of study is something like the type of possibility expressed by utterances of Moorean indicative mood modals on their epistemic reading.¹ After introducing the notion of an “epistemic modal” in this sense problematic cases of indicative mood modals are presented with the tacit assumption that in the case at hand the utterance expresses the epistemic reading introduced previously—or at least the tacit assumption that the problematic evaluation really is appropriate when the original utterance takes on the epistemic reading.²

Although Hacking et al. took a grammatical approach to “epistemic modals,” they seemed to have held with minimal caveats the following two claims.

- (C1) All Moorean utterances of indicative mood modal constructions express the same flavor of possibility.
- (C2) That flavor is epistemic, in the sense that the truth conditions of the clause depend somehow on some epistemic state.

For example, Moore affirms (C1) and (C2) in (Moore, 1959, 234). Hacking affirms them

¹By the contemporary literature I mean roughly (Barnett, 2009; Egan, 2007; Egan et al., 2005; von Fintel and Gillies, 2011; 2008b; Hawthorne, 2007; Huemer, 2007; MacFarlane, 2011; Stephenson, 2007; Yalcin, 2007). Not all of these authors though take this “semantic” approach.

²There is a good bit of effort in the literature to motivate the intuition that problematic responses like (35) are appropriate and correct *as responses to the indicative mood modal in the example*, but a subtle point is that this is not to argue that the problematic responses are appropriate and correct on every available reading of the indicative mood modal.

in (1967, 149–150) and (1975, 325).³ While DeRose explicitly argues for (C2), he seems to take (C1) for granted. (DeRose, 1991, 582–583)

These points have been questioned in the philosophical literature, although usually not in direct connection with problematic cases. For example, although he is not concerned with problematic evaluations, Alan White while affirming (C1) argues that (C2) is false. (White, 1975, 52) In an attempt to defuse problems for contextualism, John Hawthorne argues against (C1) in (2007, 97). Kai von Fintel and Anthony Gillies have contradicted the broader claim that all indicative mood modals express the same flavor of possibility in their expository writing on modals, but unlike Hawthorne have not tried to address the problematic examples in this way.⁴ (von Fintel and Gillies, 2008a; von Fintel, 2006)

My aim in the first part of this section (3.1) is to discuss the arguments for the epistemic reading of utterances in problematic examples and to discuss the problems which arise from the “semantic” approach of the contemporary literature. The conclusion on the former point is that none of the traditional arguments used to show that some utterances of Moorean indicative mood modals are epistemic run in cases when the utterance is open to problematic evaluations. The major problem with the current approach to epistemic modals is that it begs the question of whether acceptable, problematic evaluations really are possible for epistemic modals. A more general but related topic addressed is whether or not every Moorean utterance of an indicative mood modal expresses the epistemic reading. I show that this is false.

The aim of the second part of this section (3.2) is to give a positive argument for the claim that no problematic examples involve utterances which express epistemic modality (sections 3.2.1 and 3.2.2) and then to give a positive account of what sort of modality is being expressed by utterances in problematic examples (section 3.2.3). (Alternatively, one could also put the claim as follows. There is a reading of Moorean indicative mood modals, e.g. ‘It’s possible that φ ,’ on which they express some sort of epistemic modality, but no

³Hacking doesn’t quite agree with with (C1) and (C2); Hacking defines a grammatical class of modal sentences—“L-occurrences”—which is slightly different from indicative mood Modals. But, Hacking would affirm (C1) and (C2) if ‘Moorean instances of indicative mood modal constructions’ was replaced by ‘L-occurrences’.

⁴There are probably few working on natural language modals who would hold such a claim, but I suspect that the weaker claim (C1) is at least tacitly held by some.

utterances of Moorean indicative mood modals which are open to appropriate problematic evaluations express just this reading.) The positive argument that none of the utterances in problematic examples express the epistemic reading turns on an argument about when retractions can be forced. I argue, with some necessary refinements, that if an evaluation of an utterance of a Moorean indicative mood modal expressing the epistemic reading forces a retraction, then the context of utterance picks out a group G which fixes the modal base \mathcal{B} . In line with Kent Bach and von Stechow and Gillies' proposals, my positive account is that the utterances in problematic examples fail to definitely express a single proposition but rather are ambiguous between both epistemic and circumstantial readings. It is this ambiguity between both epistemic and circumstantial readings which best accounts for all the data provided by the kibitzer cases.

3.1 The Epistemic Reading of Indicative Mood Modals

3.1.1 Arguments for the Epistemic Reading Section 2 concluded with the suggestion that utterances of Moorean indicative mood modals which are open to appropriate problematic evaluations do not express epistemic modality, in the sense of definition 2.1.5.1. A variety of arguments that utterances of indicative mood modals express epistemic modality have appeared in the literature. The goal of this section (3.1.1) is to show that none of these arguments establishes that the problematic examples are cases where the utterance expresses epistemic modality.

The first argument is the one which motivated Moore to call indicative mood modals 'epistemic:' problematic examples involve *Moorean* utterances of indicative mood modals, and, so the argument would go, all Moorean utterances of modal sentences must express *some* sort of epistemic modality. (They are *Moorean* after all, i.e. false when the prejacent is known by someone.) If this line of argument were valid it would imply that all Moorean utterances of indicative mood modals express the same flavor of possibility—an epistemic flavor.⁵

The crucial premise of the argument—that all Moorean utterances of modal sentences

⁵Because of our rather coarse notion of "flavor" it would imply that all Moorean utterances of indicative mood modals express the same flavor of possibility, but would leave open the possibility that different Moorean utterances of indicative mood modals express different sorts of possibility, all of which taste epistemic.

express epistemic modality—is false. It’s also not true that all Moorean utterances of *indicative mood* modal sentences express epistemic modality. For a counterexample, assume that an utterance expresses a circumstantial modal, i.e. expresses the proposition $Q(\mathcal{B})(\varphi)$ where the modal base \mathcal{B} is picked out by the context as the set of all worlds left open by the particular circumstances of the context.⁶ For a specific example, perhaps Joe’s mother—who lives in Boston—is sick and Joe being the considerate son that he is is thinking of visiting. Then say \mathcal{B} is all the worlds compatible with the mother’s current condition and Joe’s considerate disposition along with any other pertinent facts about the situation. Then if φ is the proposition that Joe will drive to Boston tomorrow the original utterance will be true just in case there is a world compatible with the mother’s condition, Joe’s considerate disposition and all the other pertinent facts in which Joe does drive to Boston tomorrow. But clearly this utterance is Moorean. Say the speaker happened to know that Joe’s car was broken down and that Joe had no alternative means of transportation. The speaker could not truly utter $Q(\mathcal{B})(\varphi)$. Similarly, if anyone else around knew about Joe’s transportation woes they would evaluate the speaker’s utterance as false. Of course, in these cases what would “make” the speaker’s utterance false is not that the speaker or some kibitzer knew that Joe had no way to get to Boston the next day, but that Joe had no way to get to Boston the next day. That is, there is no world compatible with the circumstances—that Joe’s car is broken down—in which Joe drives to Boston tomorrow. But, as knowledge implies truth someone knowing that Joe had no way to get to Boston the next day would imply that Joe had no way to get to Boston the next day. Thus this is a clear example of a Moorean modal that is not epistemic.

Example 3.1.1.1. The Boston Case C. George, Sally and Ed are talking in the coffee line. Joe is absent today. It’s common knowledge among the group that Joe’s mother lives in Boston.

(47) Ed: I heard Joe’s mother is really sick; she’s got the flu.

(48) Sally: That’s terrible. He may be heading up to Boston for the weekend then.

(49) George: No, he can’t. His car is in the shop right now. □

⁶Here I’m not using ‘circumstance’ in any technical sense. One could replace it with something like “relevant facts that obtain.”

Since the context of an utterance often determines the flavor of a modal,⁷ a second way to argue that a given problematic case is epistemic is to argue that the context of the utterance picks out the flavor as being epistemic. The strategy would be to argue, for example, that utterances (34) and (37) in The Boston Cases A and B (2.2.1.1 and 2.2.1.2) and (38) in the Bond in Zurich example (2.2.1.3) are uttered in a context which fixes them as epistemic. The problem though is that the context of these examples cannot fix the utterances as epistemic via fixing some epistemic state as the modal base, since as mentioned in section 2.2.1 the contexts of utterance do not pick out determinately a modal base. Indeed, as conjectured at the end of section 2.2.3 no problematic utterance has a context which determinately picks out a modal base, so in general the contexts of problematic utterances will not pick out the flavor as epistemic via picking out an epistemic state as a modal base. It is worth fleshing out this conjecture a bit more. Consider the following modification of The Boston Case where the context does determinately pick out an epistemic state as the modal base.

Example 3.1.1.2. The Boston Case D. George, Sally and Ed are talking in the coffee line. Joe is absent today.

(50) Ed: Sally, do *you* know where Joe is today?

(51) Sally: He may be in Boston. □

Here I suggest that Ed's question (50) picks out the worlds compatible with what Sally knows as the modal base \mathcal{B} for the modal claim expressed by Sally's utterance (51). But as in that case, as soon as the context does enough work to pick determinately some epistemic state as the modal base, problematic evaluations become inappropriate. If George corrected Sally, she could avoid retracting her claim by pointing back to the salient bit of context that fixed what she knew as the relevant epistemic state.

Example 3.1.1.3. The Boston Case E. George, Sally and Ed are talking in the coffee line. Joe is absent today.

(52) Ed: Sally, do you know where Joe is today?

⁷See (von Fintel and Gillies, 2008a; von Fintel, 2006) for a discussion.

(53) Sally: He may be in Boston.

(54) George: No, he can't be in Boston; I just saw him in his office a little bit ago.

(55) Sally: Well he may not be, but given what I knew he could have been. □

I suggest that although Sally's reply (55) may not be the most *natural* thing to say—certainly it is rather quirky and does not move the conversation forward—it is an appropriate thing to say given Ed's question (52), in the sense that it fits within the bounds of intuitive linguistic meaning. That is, one could not fault Sally as lacking linguistic competence, given the response.

But the context of a problematic utterance perhaps picks the flavor as epistemic without determinately picking an epistemic state as the modal base.⁸ Perhaps it could be argued for a given case such as Number 2's utterance (38) in the Bond example that the context did enough work to fix the flavor as epistemic but not enough work to fix a particular epistemic state. Although one could try to argue in this way, I don't think this approach can be successful. The argument will be fully given in section 3.2.2, after some more needed development is given.

A third way to argue that a problematic case is epistemic is to argue that no other flavor of modality makes sense of the utterance. This is DeRose's method in (1991) for arguing that the utterances in the Cancer Tests Cases 2.1.3.9 and 2.1.3.10 express epistemic modality. Perhaps the same argument could be applied to problematic cases like The Boston Cases. The key feature in the Cancer Test Cases for DeRose's argument is that Jane and the doctor *seem* to disagree—one says it's possible that John has cancer while the other says not—and, assuming they both speak truly, the disagreement can only be avoided if the respective utterances (27) and (28) are read as epistemic modals with *different* modal bases. If they are read in a non-epistemic way then presumably there is some non-epistemic modal base \mathcal{B} such that (27) is affirming, and (28) is denying, the proposition $\exists(\mathcal{B})(\text{John has cancer.})$.⁹ Ignoring the possibility of relativistic semantics for modals, it is clear that this specific argument will not work for problematic utterances like those in The Boston Cases. In

⁸The context would do this when it did the same semantic work as a non-specific restricting clause, e.g. 'In view of what is known ...'

⁹This seems to be the argument DeRose has in mind, anyway. I'm not convinced that (27) and (28) cannot be read in a non-epistemic way without (27) affirming, and (28) denying, the *same* proposition.

problematic cases there is genuine disagreement, not just apparent disagreement. Sally says “He may be in Boston” and George says “No, he can’t be.” While both utterances seem to be appropriate, if the disagreement is genuine then one of them must be speaking falsely. The move to the epistemic reading in the Cancer Test Cases was to save both utterances as true, but here if indeed there is disagreement either Sally or George have spoken falsely. And, if we lose the disagreement the example is no longer problematic: the motivation for saying that George’s reply “No” was a direct denial of Sally’s assertion was that the reply expressed disagreement. Of course, if we entertain a relativistic semantics one could try to save the disagreement while admitting both utterances as true (with respect to their respective, relativistically determined, modal bases.) In addition there are surely other strategies for arguing that only an epistemic reading makes sense of a given problematic case. (It would not be feasible to try to respond to all potential arguments here.)

But in general this strategy seems misplaced in the case of problematic evaluations. Problematic examples, on the face of it, are cases where the epistemic reading does not fit. They are cases where no single modal base associated with an epistemic state makes sense of the utterances. If one successfully argued that a given problematic case could not be interpreted as a non-epistemic modal this would still not answer the problem of there being no epistemic modal base that fit the example.

Although using this strategy on examples like The Boston Case may not work well, the force of the argument is felt most for indicative mood modals such as ‘Goldbach’s conjecture may be true, and it may be false’ whose prejacent is alethically necessary.¹⁰ These indicative mood modals, the usual line goes, must be epistemic since it seems as if someone would speak truly if they both said that Goldbach’s conjecture may be true and that it may be false. If Goldbach’s conjecture is true, then it’s a logical necessity and is true in all possible worlds. But, suppose it’s true. It seems that someone would speak truly if they said that it might be false, at least on the sense of this assertion which expresses something associated with the fact that the conjecture has not been proven.¹¹ (At the time of writing Goldbach’s conjecture has neither been proven nor disproved.) Since

¹⁰The example is from MacFarlane, (2011).

¹¹Contra Seth Yalcin’s paper (2007), I don’t see anything wrong with the last two sentences.

either Goldbach's conjecture is true in all logically possible worlds or false in all logically possible worlds and both 'Goldbach's conjecture may be true' and 'Goldbach's conjecture may be false' can be truly said at least on one reading, this reading cannot express logical possibility. So the reading expresses some sort of epistemic possibility.¹² But if this is to be turned into an argument that there are some problematic cases which express epistemic modality one has to also argue that examples involving utterances of these sentences can be problematic. As I shall argue in section 3.2.2 cases involving these examples are not cases where retractions can be forced, and hence not problematic.

A fourth argument is suggested by Hacking in (1975).¹³ Epistemic contexts are generally referentially opaque. For example, $Q(\mathcal{B})(Pa)$ would be referentially opaque just in case $a = b$ and $Q(\mathcal{B})(Pa)$ could be true while $Q(\mathcal{B})(Pb)$ is false. Consider the following example.

(56) Hesperus may be a star.

(57) Phosphorus may be a star.

If (56) could be true while (57) is false, then the two modal propositions expressed are referentially opaque, which would suggest that they are epistemic. But, contra Hacking, it is not clear that there is referential opacity in this case. It's true that someone could coherently believe (56) while denying (57), but the question is whether (56) could be true while (57) false. As would be expected, when the epistemic reading is forced we get that the prejacent is opaque. Consider:

(58) Given what's known, Hesperus may be a star.

(59) Given what's known, Phosphorus may be a star.

(58) can be true while (59) is false, since what's known could rule out Phosphorus being a star while it's not known that Hesperus is Phosphorus. So evidently when indicative mood modals such as (56) express an epistemic reading the prejacent is opaque. But the question is whether or not indicative mood modals uttered in problematic examples, such as Sally's utterance (34), express the epistemic reading.

¹²It's not clear to me that such sentences cannot express any other sort of modality. The desperate mathematician who needs a certain statement to be true in order for his proof to be valid could truly say something like "This conjecture must be true!" where the modal proposition expressed is bouletic.

¹³This argument deserves a much more substantial treatment than the one presented here. To be honest it's a bit quirky and I'm not sure exactly what to say about it.

I have very thin intuitions on whether, e.g., (56) can be true while (57) false when they're placed in specific examples (and none when they're context free.) But, one important point to note is that in cases where the modal is open to evaluation against what is known by third-parties its prejacent shows a sort of referentially inopacity. Consider the following exchange:

Hesperus may be a star.

It can't be; Hesperus *is* Phosphorus, and Phosphorus *isn't* a star!

Indeed, one of our cases of problematic assessment can easily be put into similar form:

Example 3.1.1.4. The Boston Case F. George, Sally and Ed are talking in the coffee line. Joe is absent today and Sally mistakenly thinks that Providence is Beantown.

(60) Ed: I wonder where Joe is today.

(61) Sally: He may be visiting Beantown.

(62) George: No, he's can't be in *Boston*; but he did say he might visit Providence. □

As before, it doesn't seem that Sally can stand by her statement. Imagine her trying: "Oh, well he might have been in Beantown." This just seems false. Even if she tries to work in her own epistemic state she does little better: "Oh, well he might have been in Beantown, given what I knew." Sally presumably had reason to think Joe was in Providence when she uttered (61). We can even imagine that Sally knows Joe isn't in Boston—maybe he hates Boston. It seems that in this case, given what she knew Joe couldn't have been in Beantown. Her knowledge or lack thereof of the reference of 'Beantown' doesn't seem to make (61) true. Given what she knew Joe couldn't have been in Boston, but he might have been in Providence.

The idea is that in problematic cases the prejacent of the modal utterance is not opaque insofar as evaluators can appropriately evaluate the utterance by replacing co-referring terms. This suggests that the utterances in problematic examples do not have opaque prejacent. So it cannot be argued along these lines that the utterances in problematic examples express the epistemic reading—since their prejacent are not opaque. This inopacity also suggests that the utterances express non-epistemic readings.

Above I have considered four ways to argue, for given problematic cases, that the utterance expresses epistemic modality—or more precisely to argue that the utterance expresses the epistemic use of Moorean indicative mood modals. All of the argument strategies discussed though come from the classical literature by Hacking et al. The contemporary literature, on the other hand, does not present arguments that utterances which are open to problematic evaluations—that is, problematic examples—express the epistemic reading. There are, it seems to me, three potential reasons for this. First, contemporary authors may tacitly assume that *all* utterances of Moorean indicative mood modals with the pre-jacent in the present tense, or perhaps all utterances of modals which are of the form the author has in mind, express the epistemic reading. This was, with few reservations, a view held by Moore, Hacking and possibly DeRose. Second, contemporary authors may simply think it's intuitive or clear that a given problematic example, such as The Boston Case, is an instance where the utterance expresses epistemic modality. (This seems to be the tacit assumption in MacFarlane (2011), for example.) Third, contemporary authors may think that there is a “default” reading to utterances of Moorean indicative mood modals, which is the epistemic reading, and hence that problematic examples express the epistemic reading by default. (Yalcin, for example, states that the epistemic reading is the default reading. (Yalcin, 2007))

These three suggestions shall be addressed in detail over the next two sections. The first suggestion, that all utterances of Moorean indicative mood modals express the epistemic reading, is simply false. An example above, (48) in The Boston Case C, shows that it is false when the indicative mood modal has a pre-jacent in the future tense, since then it's relatively easy to get a circumstantial reading. The next section will argue that there are also non-epistemic examples with the pre-jacent in the present tense. The second two suggestions are more difficult to respond to, but the essential difficulty with them is that even if it's granted that an example is epistemic, whether in virtue of linguistic intuition or via acceptance of a default reading, it will not be clear, given the fact that not all utterances are epistemic, whether that utterance on the epistemic reading is open to problematic evaluations or whether the sentence uttered is only open to problematic evaluations when it expresses some non-epistemic reading.

3.1.2 Flexibility and Non-epistemic Indicative Mood Modals

Many modal terms can express multiple flavors of modality. The following examples involving the modal ‘have to’ are from (von Fintel, 2006).

- (63) It has to be raining. [after observing people coming inside with wet umbrellas; epistemic modality]
- (64) Visitors have to leave by six pm. [hospital regulations; deontic]
- (65) You have to go to bed in ten minutes. [stern father; bouletic]
- (66) I have to sneeze. [given the current state of one’s nose; circumstantial]
- (67) To get home in time, you have to take a taxi. [teleological]

The brackets following each sentence point to their “standard” reading, but of course the same sentence can express different flavors of modality, depending on the context of utterance. For example, (65) has a teleological reading (when uttered to one who must rise early), while (63) has a bouletic reading (when uttered by the farmer with withering crops.) These examples also raise interesting questions on contextualism about flavors of modality besides the epistemic sort. For example, (64) seems to be naturally read as deontic and the modal base \mathcal{B} the set of worlds compatible with what is permissible given some regulations.¹⁴ The presupposition then is that the context will fix the set of regulations relevant to the utterance. One may wonder then whether there are “problematic cases” for deontic modals analogous to problematic cases for epistemic modals. This is a topic I do not pursue here.

At least some indicative mood modal constructions are also semantically flexible, as example 3.1.1.1 already showed. As in that example this is seen easily when the prejacents are not in the present tense, although it’s worth rehashing for the sake of discussing how non-epistemic readings of “bare” indicative mood modal constructions relate to those with restricting clauses. Consider the following example.

- (68) It may rain tonight.

¹⁴When I say that (64) is “naturally” read as deontic, one thing I have in mind is that ‘Visitors have to leave by six pm’ expresses, more or less, the same thing as ‘In view of what’s permissible, visitors have to leave by six pm.’ To get a non-deontic reading, it seems that either the context or an explicit restricting clause must be added to cancel the “natural” reading.

Someone uttering (68) could equally be expressing something about their knowledge or something about the current state of the atmosphere. The utterance seems to be ambiguous between the two readings, and without the right context would call for clarification.¹⁵ These two different readings can be brought out with the use of restricting clauses:

- (69) (a) Given what is known, it may rain tonight.
 (b) As far as is known, it will rain tonight.¹⁶
- (70) (a) Given the current atmospheric conditions, it may rain tonight.
 (b) Current atmospheric conditions allow for rain.

Each of the first synonymous pair (69 a,b) expresses the epistemic reading of (68), while each of the second synonymous pair (70 a,b) expresses the circumstantial reading. (The point in giving multiple examples is that various restricting clauses can do the same work, also in each case the second example (b) is suppose to be a more colloquial version of the first, (a).) If an utterance of (68) expresses the proposition $Q(\mathcal{B})(\text{It will rain})$, then the function of the additional restricting clauses is to fix the modal base \mathcal{B} . In (69 a,b) the modal base \mathcal{B} is fixed as the worlds compatible with what is known, while in (70 a,b) the modal base \mathcal{B} is fixed as the worlds compatible with the current atmospheric conditions. Of course, the restricting clauses in (69 a,b) don't quite fix \mathcal{B} , since they reference "what is known" without specifying which epistemic state. This could be fixed with a more definite restricting clause, say one like 'Given what I know' or 'Given what Joe knows.' In the case when the restricting clause is 'Given what is known by the National Weather Service,' the modal base \mathcal{B} fixed may even line up with the the modal base fixed by the non-epistemic restricting clause 'Given the current atmospheric conditions,' assuming the National Weather Service has correct data on current atmospheric conditions.

Thus restricting clauses are a device for fixing the modal base \mathcal{B} of an expression.¹⁷ The above examples show that when the prejacent is in the future tense restricting clauses can be

¹⁵As discussed at the beginning of section 2.2.1, the ambiguity here is the sort introduced by there being a number of ways to resolve the modal base.

¹⁶Kent Bach in (2011) notes that unlike the phrases such as 'Given what is known,' those like 'As far as is known' end up expressing some sort of epistemic modality without an explicit modal word. For example, (69 b) seems to express the same proposition as 'As far as is known, it may rain tonight.'

¹⁷The content of this discussion of restricting clauses is not original to me. Von Fintel and Gillies (von Fintel and Gillies, 2008a; 2011) and Bach (2011) both essentially explicate the same material.

used to force non-epistemic readings on at least some indicative mood modal constructions. (Assuming we expand definition 2.1.2.1 so that if φ is an indicative mood modal, then the addition of a restricting clause to φ remains an indicative mood modal.) A modal utterance with a restricting clause that adequately fixes a modal base \mathcal{B} will not be open to problematic evaluations. As MacFarlane himself suggests in (2011), if The Boston Case A (Example 2.2.1.1) was run so that Sally says something like, “In view of what I know, he may be in Boston” instead of just “He may be in Boston” then George’s denial would be inappropriate. Sally could easily reply then just as she does in The Boston Case E (Example 3.1.1.3) with something like, “Well he may not be, but given what I knew he could have been!” These considerations also suggest that the context of utterance sometimes does the same work as a restricting clause. For example, even though Sally’s utterance in The Boston Case E does not involve a restricting phrase the context—Ed’s question—seems to pick out the same modal base \mathcal{B} —the worlds compatible with what Sally knows—as the clause ‘In view of what I know’ spoken by Sally.

Von Stechow and Gillies (2008a) and (2011) as well as Kent Bach (2011) refer to those modal sentences without restricting clauses as **bare modals**. Thus bare indicative mood modals are those indicative mood modals lacking restricting clauses. All the problematic examples are those involving utterances of bare indicative mood modals, or perhaps indicative mood modals without a restricting clause that determinately fixes a modal base \mathcal{B} , e.g. ‘Given what’s known.’¹⁸ Since the context in some cases plays the same role for bare indicative mood modals as a restricting clause, (plausibly) those indicative mood modals that express non-epistemic possibility in virtue of a restricting clause will have analogous bare cases where the context fixes a non-epistemic reading. Consider a case where the prejacent is in the present tense.

- (71) (a) Given his desire to be on time tomorrow, he may be in bed.
 (b) He’s got work tomorrow; he may be in bed.

Here the indicative mood modal ‘Given his desire to be on time tomorrow, he may be in bed’ expresses bouletic possibility as the restricting clause ‘Given his desire to be on

¹⁸As I argue in section 3.2.2, these later cases are not open to appropriate problematic evaluations.

time tomorrow' picks out just those worlds compatible with some desire. With the right contextual cues the restricting clause could be dropped; consider:

(72) Joe just got a new job, but he's got to start at 6 am.

(73) (a) Ah, well he may be in bed then.

(b) Ah, he's probably in bed by now.

To see that (73) expresses the same thing as (71), consider how the speaker could respond if corrected:

(74) Joe just got a new job, but he's got to start at 6 am.

(75) Ah, well he may be in bed then.

(76) No, Joe can't be in bed, I just saw him at Boheme.

(77) (*A puzzled look*) Sure; I just thought he'd want to be in bed, given the new job.¹⁹

Thus I take it that (73) is an example of a non-epistemic utterance of a bare indicative mood modal where the prejacent is in the present tense. But, since bouletic possibilities are non-Moorean it is not an example of a Moorean, non-epistemic indicative mood modal with the prejacent in the present tense.

What about a Moorean, non-epistemic indicative mood modal with the prejacent in the present tense? The last two examples give the ingredients: the right restricting clause will force a circumstantial reading on an indicative mood modal, even if the prejacent is in the present tense, and plausibly the right context will force the same circumstantial reading on the corresponding bare indicative mood modal. Since circumstantial modals are Moorean, this will be a Moorean, non-epistemic indicative mood modal. For example, one could simply run The Boston Case C (3.1.1.1) again, this time with Sally saying "He may be in Boston,"

Ned: I wonder where Joe is today, he usually doesn't miss lunch.

Ed: I heard his mother is really sick; she's got the flu.

Sally:

(a) That's terrible! He may be in Boston visiting her.

¹⁹As before, (77) may not be very natural, but it is appropriate—i.e. within the meaning of what is said.

(b) That's terrible! Maybe's he's up visiting her in Boston.

George: No, he can't be. His car is still in the shop.

What I want to claim is that in this example there is a circumstantial reading of Sally's utterance available, although it's also possible to hear an epistemic reading.

As the above example suggests, the problem with this approach is that when the pre-jacent is in the present tense it can be difficult to "hear" the circumstantial reading of an indicative mood modal, even when there is a restricting clause or the context is doing all it can to pick it out. Consider what happens when we try to force the circumstantial reading on 'Joe may be in Boston' or 'It's possible that Joe is in Boston' using restricting clauses,

(78) In view of the circumstances, Joe may be in Boston.

(79) In view of the circumstances, it's possible that Joe is in Boston.

The restricting clause 'In view of the circumstances' (just as the context in the example above) is supposed to force a circumstantial reading of 'Joe may be in Boston' and 'It's possible that Joe is in Boston,' but it's not clear that it does so. First, one could object that (78) sounds just like an epistemic modal. (One could object that the context only provides the evidence which prompts Sally's claim.) Someone who uttered (78) would be making an epistemic modal claim. The restricting clause 'In view of the circumstances' isn't picking out the set of worlds compatible with the circumstances as the modal base, but rather is pointing to the relevant facts known by the speaker which prompted the assertion in the first place. (In fact, there is a broader objection here. One could suggest that restricting clauses don't usually function as I've described. Perhaps (70 a,b) sound just as epistemic as (69 a,b), the "restricting clauses" not picking out the modal base, but pointing towards the known facts which prompted the assertion.) Second, one could object that (79) just sounds bad. Hacking, for example, would suggest that (79) is ungrammatical and that it should be 'In view of the circumstances, it's possible *for* Joe to be in Boston.' (So this suggests a general limit with the above approach. While 'may' constructions *may*(φ) are flexible enough to change flavor with the addition of a restriction clause, it might be argued that possible-that constructions cannot take restricting clauses which would force a non-epistemic reading.) Lastly, one could object that even if (78), (79) or some similar sentence

with a different restricting clause managed to express a circumstantial reading that the base indicative mood modal ‘Joe may be in Boston’ was so easily heard as epistemic that no context could do the work of the restricting clause and cancel the epistemic reading.

The general objection that it’s very hard to “hear” certain indicative mood modals as anything but epistemic is not a fatal one. It seems correct that certain indicative mood modal constructions, e.g. ‘He may be in Boston’ or ‘He might be in Boston,’ express awkwardly non-epistemic modality, if they do it at all. The most natural way to express the circumstantial modal claim that Joe is possibly in Boston is with something like ‘Given the circumstances, it’s possible for Joe to be in Boston,’ which of course is not an indicative mood modal construction. The objection is not fatal because the claim is not that all indicative mood modals are flexible enough to express non-epistemic possibility, but that some are, and because the claim is not that non-epistemic readings are the most natural readings, but that they are admissible readings. Of course, the best way to meet the objection is to find indicative mood modals (with the prejacent in the present tense) which are naturally heard as non-epistemic. Consider the following examples.

- (80) He may want an aspirin.
- (81) Given how much he drank last night, he may want an aspirin.
- (82) It’s possible that he believes Hesperus is a star.
- (83) It’s possible that he believes Hesperus is a star, given that he doesn’t know Hesperus is Phosphorus.
- (84) He may regret staying out so late.
- (85) He may regret staying out so late, now that he has to be up so early.
- (86) It’s possible that he might have cancer.
- (87) It’s possible that he might have cancer, given that we don’t know the results of the filter test.

The difference between these cases and (78) and (79) is that the prejacent involve propositional attitudes and other modal terms. I suggest that all of these are easily heard as circumstantial. For example, ‘He might have cancer’ is naturally heard as epistemic, but (87) naturally suggests a circumstantial reading: given the circumstances—that a filter test was run but we don’t know the results yet—the epistemic modal claim that he might have

cancer is possibly true, we in fact don't know yet what we know. It actually is difficult to hear epistemic readings of the main modal (the outer one which takes widest scope) in the above examples, especially (86) and (87).

The objection that the “restricting clauses” aren't really fixing the modal base, but rather giving pragmatic information, seems most salient in cases like (78) where it is difficult to hear anything but the epistemic reading. If an indicative mood modal like ‘Joe may be in Boston’ cannot be “heard” as anything but epistemic, then additional restricting clauses like in (78) will be heard as giving pragmatic information, e.g. giving the salient known facts which prompted the utterance. But in cases like (80) where there is a salient non-epistemic reading the restricting clause does pick up that reading and fix the modal base, e.g. (81). If (80) is uttered in the right context (plausibly) contextual cues can pick out the circumstantial reading.

The extent to which a restricting clause can be used to force non-epistemic readings of indicative mood modals seems to depend on the particular modal construction. If Hacking is correct, possible-that constructions can never take restricting clauses that would force a non-epistemic reading. Constructions involving ‘may’ are a little more flexible, more easily taking non-epistemic readings when the prejacent is either in the future tense or itself involves modal terms.²⁰ The claim that all Moorean utterances of indicative mood modals with prejacent in the present tense express an epistemic reading is false. When the prejacent itself is a present tense modal sentence circumstantial readings of the main modal are natural. When an indicative mood modal expresses circumstantial modality as do (80-87) it is Moorean, since circumstantial modals are Moorean. So these are counterexamples. More controversially, we can at least get some distance, I think, with forcing circumstantial readings in cases where the prejacent isn't a modal sentence itself.

3.1.3 A Problem with the Current Approach Many in the current literature on “epistemic modals” set out the topic differently from what is done here and in the classical literature. For Moore, Hacking, Teller and DeRose the object of study was the sort of

²⁰This difference between possible-that and ‘may’ constructions, while not unexpected, calls into question the claim that the two are “synonymous.” Perhaps the best thing to say is that, e.g., ‘It may rain’ and ‘It's possible that it will rain’ have readings on which they express the same proposition, but the sentences themselves are not synonymous insofar as they can express a different range of modalities.

possibility expressed by a certain class of grammatical constructions. This perspective is reflected in their treatment of the subject: each attempts to justify the name ‘epistemic.’ DeRose in particular takes care to argue that indicative mood modal constructions express possibilities which are epistemic as defined in definition 2.1.5.1. Some in the contemporary literature, myself included, take this approach. Another contemporary author who falls into this camp and also defends a “classical” contextualism is Michael Huemer. The first page of his article (2007) rather straightforwardly lays out his project as describing the sort of possibility expressed in “ordinary life” by sentences of the form ‘It might be that P.’ Unlike DeRose though, Huemer “assume[s] that sentences of the form ‘It might be that P’ ... typically ascribe epistemic possibility.” (2007, 119) Other contemporary researchers, such as Andy Egan (2007, 1–2) and Seth Yalcin (2007, 983), are less careful to delineate their subject, but appear to take the same approach.

But some in the current literature take a different approach.²¹ Tamina Stephenson, for example, defines ‘epistemic modals’ as those modals expressing whichever reading of English modals is epistemic. She introduces her topic by saying,

It is widely assumed that (1a) has a reading (its epistemic reading) which can be expressed as something like (1b) (Kratzer, 1977).

(1) (a) It might be raining.

(b) In some world compatible with what is known in the actual world, it’s raining.

(Stephenson, 2007, 487)

Von Fintel and Gillies, in both their research and expositions, give similar semantic characterizations of ‘epistemic modal.’ (von Fintel and Gillies, 2011; 2008a; von Fintel, 2006) The idea is that there is some reading for modals like ‘It’s possible that φ ’ which is epistemic on definition 2.1.5.1 and the object of study is the truth conditions for this reading. Another contemporary author, John MacFarlane, seems to take this approach as well. He says, “By ‘epistemic modals,’ I mean epistemic uses of modal words: adverbs like ‘necessarily,’ ‘possibly,’ and ‘probably,’ adjectives like ‘necessary,’ ‘possible,’ and ‘probably,’ and auxiliaries like ‘might,’ ‘may,’ ‘must,’ and ‘could’.” (MacFarlane, 2011) As the last quote

²¹An approach taken, as the following quote indicates, by at least some contemporaries of Hacking.

indicates, contemporary authors are usually much more promiscuous about which lexical items they consider. Hacking et al. generally stick to ‘may’ and possible-that when looking for examples of modals with epistemic readings. Egan and MacFarlane let in items like ‘probably’ and ‘could.’²²

As has been shown over the last few sections, these criteria do not line up. Every epistemic modal is an indicative mood construction—assuming the prejacent is in the present tense. But not every indicative mood modal is epistemic. Not every sentence with ‘may’ or possible-that has only epistemic readings. (Or rather, not every utterance of such a sentence expresses an epistemic reading.) Sentences involving ‘probably’ and ‘could’ also have non-epistemic readings.²³ There is a difficulty which arises from this disconnect between the grammatical and semantic criteria. Everyone agrees that there is a use of sentences like ‘It’s possible that it’s raining’ and ‘It may be raining’ on which they express some sort of epistemic possibility. The project is to describe the truth conditions for this particular use and proposals are checked against a variety of linguistic data such as the examples in section 2. But since expressions like ‘It may be raining’ can also express other flavors of possibility that aren’t epistemic not every example of, say, an utterance of an indicative mood modal is data on the epistemic reading.²⁴ In the example the utterance must actually be expressing, in its context, the epistemic reading. For example, cases where (71) or (80) are uttered are not cases which should be considered when trying to describe the truth conditions of the epistemic reading of indicative mood modals.

So the problem is that in any putative case of an epistemic modal it must actually be checked that the utterance (of the Moorean indicative mood modal or whichever grammatical criteria one has in mind) is expressing the epistemic reading, or that other conversation partners are evaluating the epistemic reading. This is a problem because while some cases clearly are ones which express the epistemic reading and others not, it is certainly not clear

²²Hacking himself would probably not object, as he saw ‘probably’ as a term which should be substitutable for ‘possible that’ in sentences which expressed the epistemic reading.

²³Other distinctions we could draw seem to fall as follows. Every epistemic modal is Moorean, but not every Moorean modal is epistemic. Every Moorean modal is an indicative mood construction—again assuming the prejacent is in the present tense—but not every indicative mood construction is Moorean. Not every use of ‘may,’ ‘might,’ ‘probably’ or ‘likely’ is Moorean (resp. epistemic), and obviously not every Moorean (resp. epistemic) modal involves ‘may,’ ‘might,’ ‘probably’ or ‘likely.’

²⁴Likewise, since not every Moorean utterance of a modal is epistemic, not even every example of a Moorean utterance of a modal is data on the epistemic reading.

in many cases that this is so. The “problematic cases” as defined in definition 2.2.3.4 are cases in point. It is not clear that it is the epistemic reading which is being expressed in these cases, in part because there is no single epistemic state which accounts for the example.

The second objection at the end of section 3.1.1 was that an argument isn’t needed to show that the utterance in problematic examples expressed the epistemic reading. It simply is obvious or intuitively clear, so the objection goes, that, e.g., “Joe may be in Boston” expresses the epistemic reading. But while it’s obvious or intuitively clear that the utterances in problematic examples have an epistemic reading, they also have non-epistemic readings. This objection fails then because although it’s intuitively clear that the utterances have epistemic readings, it’s not intuitively clear that the utterances are open to (appropriate) problematic evaluations on their epistemic readings or that it is the epistemic reading which is being expressed and evaluated in the problematic examples. In fact, as the considerations at the end of section 2 it is *prima facie* false.

Thus the relativist’s arguments have the potential to simply misfire. The target is the epistemic reading, but a given example may actually not involve the epistemic reading at all. This is what in the next section (3.2) I argue has happened in the debate over relativism and the problematic examples. Relativist arguments from problematic examples misfire. The target, of course, is the epistemic reading, but the utterances in problematic cases do not express that reading in a straightforward way.

3.2 Explaining Problematic Examples

3.2.1 Hacking’s Observation In section 2 it was argued that the most straightforward conclusion to draw from the lack of an epistemic state which makes sense of all the responses in problematic examples such as The Boston Case A and B (examples 2.2.1.1, 2.2.1.2) and the Bond in Zurich example (example 2.2.1.3) was that these cases aren’t epistemic. (After all, if they were must there not be some epistemic state and a corresponding modal base?) In section 3.1 it was argued that none of the usual arguments for establishing that some epistemic reading is correct for some indicative mood modals run in the case when the example is problematic. As the last section argued, although it’s intuitively clear that

there are epistemic readings for the utterances in problematic examples, it's not intuitively clear that problematic evaluations are appropriate on those epistemic readings. In this section (3.2.1) I give a positive argument that the cases are not epistemic. The observation made here, what I call Hacking's observation, suggests that they are circumstantial.

Recall Hacking's example of the salvage ship, example 2.1.3.3. The mate says "It's possible that the wreck is in these waters," but according to the log the ship was nowhere near the location the mate said it might be. The captain, on examining the log, sees this and exclaims, "The wreck couldn't have been here!" The intuition is that the captain has spoken correctly. The mate, it seems, was wrong. The wreck couldn't have been where he said it might be. Hacking's suggestion, tacitly assuming that the mate's utterance expresses epistemic modality, is that it is because a practicable investigation would have lead the mate to know that the ship isn't in those waters that the mate spoke falsely. But the real key to this example, I suggest, is simply that the ship was nowhere near the location the mate referred to when it sank. It is impossible for the wreck to be where the mate said it could be because, as the log shows, the ship wasn't in that area before it sank. That the ship's last location is recorded in the log and that someone could come to know the last location by properly examining the log are red herrings. To see this, consider a second version of the example.

Example 3.2.1.1. The Salvage Worker (Revised). There is a salvage crew searching for a sunken ship. The mate of the salvage ship, after looking through what meager evidence is available, says,

(88) Mate: It's possible that the wreck is in these waters.

But it turns out in fact that when the ship sank it was nowhere near those waters. The mate learns this a few weeks later, after logs have been better reviewed, survivors interviewed and the wreck is finally found. The mate says,

(89) Mate: I was wrong, the wreck couldn't have been there!

Indeed; it seems that even if the location of the ship's sinking was never discovered the mate still would have spoken falsely. It sounds correct to say that if the ship didn't sink anywhere near these waters, then its impossible for it's wreck to be there. □

The claim is that objective factors, i.e. that the ship was nowhere near that location when it sank, really do matter to the truth of the mate's claim. Note also how easily the example is turned into a problematic case:

Example 3.2.1.2. The Salvage Worker (Problematic). There is a salvage crew searching for a sunken ship. The mate of the salvage ship is meeting with the captain and after looking through what meager evidence he has, says,

(90) Mate: It's possible that the wreck is in these waters.

(91) Captain: No, it can't be in those waters. The log clearly shows that the ship wasn't near there when it went down. □

There is a similarity between problematic cases and cases, such as *The Salvage Worker* (2.1.3.3) and unlike *The Doting Grandmother* (2.1.3.6), which seem to require practicable investigations or epistemic reach.²⁵ Just like it seems that objective facts are what make the mate's claim false, it also seems that objective facts are at play in the problematic examples. Consider *The Boston Case B*. Here you, the reader, are a kibitzer who overhears Sally's utterance "He may be in Boston." You know, by supposition, that Joe isn't in Boston, you just saw him down the hall here in Berkeley. Given the set up, most people seem to evaluate Sally's utterance as false. But it seems to me that the fact that you the kibitzer *know* that Joe isn't in Boston is irrelevant. Imagine the example was run so that neither you nor Sally nor anyone in the conversation know that Joe is still here in Berkeley. But suppose he is, in fact, still here in Berkeley. Given this set up, is it possible for Joe to be in Boston? Can Sally truly say "Joe may be in Boston"? It seems to me that she cannot. It is impossible for Joe to be in Boston, if in fact he's in Berkeley.²⁶ One way to put the observation is that it just sounds correct, in English, to say that if Joe's in Berkeley, then he can't be in Boston.

²⁵MacFarlane, in (2011), also points out this similarity. Obviously, though, he does not draw the conclusion, drawn just above, that the objective facts really do matter.

²⁶To be more formal, the feeling is that what makes (37) false is not that there does not exist a world w , consistent with what the kibitzer knows, in which 'Joe is in Boston' is true. Rather what seems to make (37) false is that there does not exist a world w , consistent with the fact that Joe is in Berkeley, in which 'Joe is in Boston' is true. That is, the modal base B that is relevant for the evaluation of (37) is the set of worlds consistent with the fact that Joe is in Berkeley, not the set of worlds consistent with what the kibitzer, or anyone else, knows. I should note that although I have no rigorous empirical data, this is a common response I get from colleagues. They say that sure, Sally has spoken falsely. But the idea is usually that what makes Sally's utterance false is *that Joe's still here in Berkeley*, not that they, supposedly, know this.

So examples where “objective facts” seem relevant are easily turned into problematic examples and problematic examples, arguably, are cases where “objective facts” seem relevant. What I in this section call **Hacking’s observation** is the simple observation that in some cases, specifically the problematic ones, objective facts *seem* relevant. My suggestion is just as we should take seriously that problematic cases are cases where there are apparently no epistemic modal bases which resolve the contextual indeterminacy, we should also take seriously that problematic cases are cases where objective facts seem relevant. Instead of accounting for the seeming relevance of objective facts by appeal to practicable investigations or epistemic reach, I suggest that these cases are ones where the truth of the utterance does depend on objective facts, i.e. on the circumstances, and not on what the speakers know about the circumstances.²⁷

It’s important to note that Hacking’s observation isn’t trivial. There are certainly cases where objective factors don’t seem relevant. Teller’s example of the doting grandmother (2.1.3.6) is one case in point. The doting grandmother’s utterance “It’s possible it will be a boy, it’s possible it will be a girl. Should I buy blue or pink?” seems okay even on the supposition that, say, it’s actually a boy. This, in fact, seems to be a major motivation for taking Hacking’s observation seriously. Hacking’s truth conditions for Moorean indicative mood modals, recall, require that practicable investigations or epistemic reach always be taken into account. Teller’s example of the doting grandmother shows that objective factors aren’t always relevant. DeRose attempts to fix the problem by stipulating that practicable investigations or “ways of coming to know” only be taken into account if they are *relevant*. The problem with this suggestion is that it’s just difficult to set out when epistemic reach

²⁷Although Hacking himself doesn’t make this jump, it’s interesting that some of his own descriptions are suggestive of it. Recall the quote given at the end of section 2.1.1. Hacking says, “It is not possible that there are two hundred armchairs in my room as I write these notes, for I am sitting here in these cramped quarters and can see perfectly well that there are only three or four chairs altogether.” (1967, 145–146) Why is it impossible that there are two hundred armchairs in Hacking’s room? Because in fact there are only three or four chairs altogether. It’s also worth noting that Seth Yalcin seems to make a similar observation, although again he interprets it under the tacit assumption that the modality is epistemic. He opens his paper (2007) by pointing out that sentences such as ‘It is raining and it might not be raining’ and ‘It isn’t raining and it might be raining’ sound terrible, especially when ‘might’ carries the reading it does when Sally says “Joe might be in Boston.” Presumably sentences like ‘Joe is in Berkeley and he might be in Boston’ where the prejacent of the modal, second conjunct implies the negation of the non-modal, first conjunct sound just as bad. But of course the negation of ‘If Joe is in Berkeley, then he can’t be in Boston’ is a sentence of just this form. Since ‘Joe is in Berkeley and he may be in Boston’ sounds bad we would expect something which contradicted it to sound natural. Indeed, if Joe is in Berkeley, then he can’t be in Boston.

is relevant and when it's not. As von Fintel and Gillies say regarding defining "practicable" investigations in a way which fits the data, "Consulting Schmolmes's interview notes can count, as can ships logs (Hacking), and medical test results in a sealed envelope (DeRose). But performing a baby gender test does not, and apparently, neither does looking behind curtains or in a car. The project of gerrymandering epistemic reach to fit these boundaries has all the hallmarks of a project we don't want to take up." (von Fintel and Gillies, 2011, 7) But by taking Hacking's observation seriously the problem just disappears. In *The Boston Case A* (and *B*), *The Salvage Worker*, and *The Crooked Lottery* the modality expressed by the speakers really is such that the truth of the utterance depends on objective factors, while in cases like *The Doting Grandmother* the modality expressed by the speakers isn't. As was discussed above, Moorean indicative mood modals can express different flavors of modalities—sometimes circumstantial and sometimes epistemic. In cases where objective factors seem relevant we have a circumstantial modal, and in cases where they don't we have an epistemic modal. There's no need to explain why some epistemic modals are sensitive to "epistemic reach" and others not.

Now those who want to defend the epistemic reading can make two moves. The first is to argue that the tendency to say, e.g., that it is that Joe is in Berkeley which makes the modal claim false and not your knowledge of it comes from a difficulty in taking an objective perspective. It's difficult to assume that Joe is in Berkeley and evaluate the modal claim as if you did not know it. (Indeed, your supposition that Joe is in Berkeley is background against which you evaluate the claim and evaluating something against a supposition is very much like evaluating something against what you know.) The second move is to point out that if Joe being in Berkeley did imply that he couldn't be in Boston then the modality is in danger of becoming trivial.²⁸ We would have that Joe may be in Boston if and only if he is in Boston!

The first objection is not that it is unnatural to say things like "If Joe is in Berkeley, then he can't be in Boston" or to deny that it *seems* like Sally's utterance is false if Joe is in Berkeley, but to deny that we can reliably read off truth conditions from this observation. The criticism is a criticism about how fine grain our linguistic intuitions are. A direct way

²⁸This is a point made by Yalcin in his discussion of this observation.

to respond is simply to deny that our linguistic intuitions are as coarse as the objection supposes. After all, the observation is not a trivial one. The observation doesn't hold in The Doting Grandmother example. If intuitions were that coarse it would seem that one should judge the grandmother's utterance as false when they suppose that the unborn child is, say, female.²⁹ Even supposing that the unborn child is a girl it still seems like the grandmother, who doesn't know the sex, can truly say "It may be a boy." But a second, tangential, way to respond is that taking Hacking's observation seriously and assuming that Sally's utterance is circumstantial leads to a nice explanation of why practicable investigations or "objective factors" seem relevant in some cases but not in others. It is that the utterances actually are circumstantial in The Boston Case A or The Salvage Worker case which explains why we hear them as false when we suppose the circumstances are such that the prejacent isn't true, while similar suppositions don't lead to similar denials in The Doting Grandmother example or the Suzy-on-the-Bus case because there the utterance does express the epistemic reading. Those who want to stick to the epistemic story, whether they're relativists or contextualists, need to explain the difference.³⁰

But the second objection—that explaining the seeming relevance of objective facts by opting for a circumstantial reading trivializes the modality—is much more pressing. If the utterance "Joe may be in Boston" is expressing a circumstantial reading, i.e., if objective facts are relevant to its truth, the question is with respect to what set of circumstances is the utterance expressing a possibility? If it's uttered at a time when Joe is in Berkeley, then the circumstances of Joe being in Berkeley seem relevant. But the same considerations which lead us to consider Joe being in Berkeley as relevant to the truth of "Joe may be in Boston" seem to rule in lots of other circumstances as relevant to the truth of the modal claim. For example, if Joe is in Houston, then those circumstances would also prevent him

²⁹If intuitions are not sharp on the grandmother case, consider Hawthorne's Suzy-on-the-Bus example. Here it seems that John, who isn't on the bus, can truly say "I may be on the Bus."

³⁰The relativist's problem is a bit different. The relativist, of course, explains the problematic cases or the seeming relevance of "objective facts" by saying that in each case each person is evaluating the claim based on what they know. The problem that objective facts don't always seem relevant, for the relativist, is the problem that people don't always evaluate the Moorean indicative mood modal claims of others based on what they know. So the contextualist must explain why what's within epistemic reach doesn't always count, while the relativist must complicate his story and allow that not all utterances of Moorean indicative mood modals are relative. But then, just like the contextualist, we can press and ask for the difference between those cases that are relative and those that aren't. The circumstantial proposal is a salient theoretical story that answers this question.

from being in Boston. Continuing this reasoning, Joe being anywhere but Boston would make ‘Joe may be in Boston’ false. Although it seems right to say that if Joe is in Berkeley, then he can’t be in Boston, it seems false that “Joe may be in Boston” is true only if Joe is in Boston. Even if there is a reasonable way to define the circumstantial modal expressed by “Joe may be in Boston” which doesn’t trivialize the modality, there is a danger that on this circumstantial reading Sally’s utterance is unjustified. For example, if Joe being in Berkeley rules out the possibility of him being in Boston, then Sally shouldn’t utter “Joe may be in Boston” if she doesn’t know whether he’s in Berkeley. The suggestion for dealing with this problem, developed in section 3.2.3, is that although Sally’s utterance “Joe may be in Boston” expresses this strong circumstantial reading, it’s actually ambiguous and also expresses an epistemic reading.

3.2.2 The Argument from Retraction Above it was argued that Hacking’s observation suggests that problematic examples aren’t cases where the modal expresses an epistemic reading. The observation suggests rather that they are cases where the modal expresses a circumstantial reading. In this section I argue that utterances which express just the epistemic reading are not open to appropriate problematic evaluations. The question the argument focuses on is when retractions can be forced. Recall from the first half of section 2.2.3 that the main argument for the appropriateness of problematic evaluations in problematic cases is that they force retractions. In the problematic cases it is the circumstantial reading which drives the evaluations and forces the retraction. Sally is forced to retract her claim in The Boston Case A, for example, because if Joe is in Berkeley then he can’t be in Boston. This feature of problematic cases—that objective facts seem to matter—drives the retractions and is lacking in cases where the utterance only expresses an epistemic reading. Since, as I suggest, nothing else could drive retractions in these cases they cannot be problematic.

Begin by contrasting three sorts of cases: clear cases of epistemic modals where retractions can’t be forced, clear cases of epistemic modals where retractions can be forced and the problematic cases. As discussed in section 2.2.3 cases such as The Cancer Test (examples 2.1.3.9 and 2.1.3.10) where the context determinately picks out an epistemic state as the modal base are good examples of epistemic modals where retractions cannot be forced. The

speaker, Jane, can appropriately defend their claim by pointing back to the bit of context which picked out the epistemic state, so long as such a defense is appropriate given the contextually determined epistemic state. If Sally says “Joe may be in Boston” in a context which somehow picks out what she knows as the relevant epistemic state and excludes what George knows, like in The Boston Case D (3.1.1.2), then she can defend her claim by pointing back to the context. But, if she says it in a context which somehow picks out what’s known by both her and George, then George can force a retraction. Clear cases of epistemic modals where retractions can be forced thus are cases where the context picks out an epistemic state which includes what is known by the person forcing the retraction. Ed asks “Do you guys know where Joe is?” and Sally responds “He may be in Boston.” George though just saw Joe down the hall, here in Berkeley. He says “No, he can’t be in Boston, I just saw him down the hall an hour ago.” Supposing that the context was such so that Sally’s utterance expressed something like *given what George and I know, he may be in Boston*, Sally will be forced to retract her claim.

Clear cases where the utterance expresses the epistemic reading are cases where the context determinately picks out an epistemic state as determining the modal base. When that epistemic state does not include what’s known by a potential evaluator, the evaluator cannot force a retraction. When that epistemic state does include what’s known by a potential evaluator, they can. As I have argued above, problematic cases are different. Here evaluators can force retractions because it seems that the truth of what’s said depends on objective facts. The question is whether we can ever have a case where an utterance expresses an epistemic reading which is open to appropriate problematic evaluations. When the utterance is epistemic in virtue of the context determinately picking an epistemic state it is not open to appropriate problematic evaluations. The cases of interest then are the case when the context does the work of a nondeterminate restricting clause such as ‘given what’s known,’ or cases like ‘Fermat’s last theorem may be true’ where the prejacent is either logically necessary or impossible. Call these **non-specific epistemic modal utterances**: they are utterances of Moorean indicative mood modals which express an epistemic reading without specifying a specific epistemic state.

An immediate point to make is that if these cases are open to appropriate problematic

evaluations, and hence the speaker is forced to retract their claim, they're not open to them in virtue of Hacking's observation. Sally is forced to retract (34) in The Boston Case A, for example, because it seems as if Joe being in Berkeley makes the utterance false. But in a case where someone essentially says "Given what's known, Joe may be in Boston" it is false that Joe being in Berkeley makes the utterance false. Joe could be in Berkeley even if given what's known he may be in Boston. Likewise for 'Goldbach's conjecture may be true.' Supposing that Goldbach's conjecture is in fact false, I can still right now truly say "Goldbach's conjecture may be true."

I conjecture that there's nothing else which could force retractions in these two sorts of cases. Before gesturing at an argument for this conjecture, consider what is probably the most obvious potential counterexample.

Tim: Fermat's last theorem may be false.

Tony: No, it isn't. Wiles finished the proof years ago.

Tim: Oh, okay.

Here we have an epistemic modal and an apparent retraction. It is a clear case of an epistemic modal where the context does not determinately pick out an epistemic state, although we could venture some guesses. So is this not a case of a non-specific epistemic modal utterance where a retraction is forced? If so, then it's a problematic example where the utterance does express epistemic modality.

The first thing to say about the example is that it's not in quite the same form as the typical problematic cases. Tony does not reply "No, it *can't* be," rather he says "No, it *isn't*." Here Tony is ostensibly denying the prejacent, not the modal claim itself. Trying to run the result with "No, it can't be" gets awkward results, or so it sounds to me. It sounds better for Tony to say "No, it isn't" rather than "No, it can't be." Given that Tony's ostensibly denying the prejacent Tim's response "Oh, okay" doesn't come through as a retraction either. In fact it doesn't sound so bad for Tim to mount a defense:

Tim: Fermat's last theorem may be false.

Tony: No, it isn't. Wiles finished the proof years ago.

Tim:

- (a) Oh, I didn't know that.
- (b) Well it might be true, but given what I knew it might have been false.

So I first suggest that in Goldbach/Fermat cases where the prejacent is a logical necessity or impossibility the natural thing to do for third-parties in the know is simply to affirm or deny the prejacent and not to evaluate the modal claim itself. When they do try to deny the speaker's utterance, the speaker can defend their utterance and not retract. Thus these are not good candidates for problematic cases.

It is a bit more difficult to gather intuitions on the case when the context does the work of a nondeterminate restricting clause because it is difficult to find clear examples where the context does this. One way to approach the problem is to just consider cases where the speaker uses a nondeterminate restricting clause. Plausibly the responses which are appropriate in this case will likewise be appropriate when the context does similar work.

Sally: Given what's known, Joe may be in Boston.

George: No, he can't be. I just saw him down the hall an hour ago here in Berkeley.

Sally:

- (a) Oh, okay then. ??
- (b) Fine, he can't be, but I still stand by what I said. ??
- (c) Look, maybe he isn't, but given what I knew he might have been. ??

In the face of George's apparent denial, which of these responses from Sally is appropriate? I have a hard time hearing (b), but (a) and (c) seem to go through better. What are Sally's options? She can be pragmatic, say (a) and accept George's information and move on, or be stubborn and go with (c). It "feels" as if there's enough wiggle room in the locution 'given what's known' for Sally to fall back on the epistemic reading which considers only what she knows. As von Stechow and Gillies suggest, the option is available for the speaker to simply be stubborn without displaying linguistic incompetence. (That is, (c) is appropriate.) I conclude that when there is no circumstantial reading available to drive the retraction it is less clear that George can force Sally to retract.

3.2.3 Semantic Ambiguity and the Circumstantial Reading But if the problematic examples aren't cases where the utterance expresses the epistemic reading, what is

being expressed? Hacking's observation discussed in section 3.2.1 suggests that they are circumstantial. The idea there was that what made Sally's utterance "Joe may be in Boston" false was that Joe was in Berkeley. If Joe is in Berkeley, then it's false that he may be in Boston if 'may' takes the same reading as in the original utterance. But the problem with this proposal is that it seems to trivialize the modality expressed by the utterances in problematic examples. If 'may' or 'possible that' express circumstantial modality in these examples then they are expressing a rather strong sort of circumstantial modality. On this reading of 'may,' Joe may be in Boston if and only if he is in Boston. But it just doesn't seem like what is being said by Sally collapses to the claim that Joe is in Boston.³¹ It seems that Sally can truly say that Joe may be in Boston even if he's not. The other problem with this conclusion is that it seems to make Sally's claim unjustified. Sally, by assumption, does not know where Joe is. So if her utterance "He may be in Boston" is true just in case he is in Boston it would be unjustified. Sally shouldn't assert propositions she doesn't know or isn't reasonably sure about. But Sally's utterance does seem justified, it is appropriate. No one would question Sally's semantic competence for saying that Joe may be in Boston when she isn't *sure* whether he is.

So here's the situation: Hacking's observation suggests the circumstantial reading. Indeed the circumstantial reading seems to explain best why utterances in problematic examples are evaluated as they are by kibitzers. But the circumstantial reading supported by Hacking's observation is rather strong. It trivializes the modality and makes Sally's utterance unjustified. This is where the epistemic reading is so natural. If Sally's utterance expresses something about her epistemic state then the modality is neither trivial nor unjustified. Sally is perfectly capable of judging whether what she knows rules out Joe being in Boston. A natural suggestion seems to be that Sally's utterance is ambiguous in some sense.³² Both the circumstantial and epistemic readings are available. The availability of

³¹As discussed in section 2.2.2, this is a problem for expressivism. Expressivism holds that 'Joe may be in Boston' is true if and only if Joe is in Boston, that the modal 'may' expresses something about the speaker's disposition towards the prejacent. But it does seem as if Sally can truly say "Joe may be in Boston" even in some cases where he's not.

³²Note the difference: the point of section 3.1 was to argue that *sentences* like 'Joe may be in Boston' are ambiguous between various readings of the form 'Given ... , Joe may be in Boston.' But perhaps the context of an utterance of such an ambiguous sentence in fact fixes a certain reading. Then an utterance of an ambiguous sentence would non-ambiguously express a proposition. The claim here now is that at least

the epistemic reading makes the utterance a natural and justified one. The availability of the circumstantial reading explains kibitzer's evaluations.

Before trying to fill out the picture just sketched, consider what other reasons there are for thinking that the utterances of indicative mood modals in problematic examples are in some way ambiguous. Von Fintel and Gillies, in (2011), also argue that there is a sense in which the utterances in problematic examples are ambiguous. They motivate their claim by pointing out that problematic examples are examples where the context does not do much semantic work. As they say, "The canon [contextualism] requires contexts to do more than they in fact do: a context in which a BEM [bare epistemic modal] is deployed need not, it seems, fully determine a relevant group of agents. This is more feature than bug, though, generating ambiguity as-if by design." (von Fintel and Gillies, 2011, 15) But my claim is stronger than von Fintel and Gillies's claim. They see the context of problematic cases as being indeterminate between competing epistemic states, tacitly holding that the utterance still expresses only an epistemic reading, while I argue that the context in these cases is also indeterminate between epistemic and circumstantial readings. It's not just that the context fails to pick out a particular epistemic state as the modal base of the utterance, it fails to pick out the modal base as being the set of worlds compatible with some epistemic state.

Kent Bach, in (2011), also thinks there is ambiguity to the utterances in problematic cases. Bach's claim though is stronger than mine in some respects. Bach argues that all bare modal sentences are ambiguous and denies that that context of utterance is the sort of thing which resolves these ambiguities. Thus all utterances of bare indicative mood modals fail to express propositions, i.e. are themselves ambiguous between a number of readings.³³ Bach motivates this claim by contrasting bare modal sentences with those with restricting clauses. Since bare sentences lack restricting clauses, plausibly their semantic content lacks something as well, so his argument goes. (Bach, 2011, 2,12) While I deny that all utterances

in problematic cases, the context fails to fix a reading and so the utterance itself is ambiguous.

³³Bach does not share some of the basic assumptions of this thesis. He says, "It will immediately be objected that the radical invariantist claim about bare EP [epistemic possibility] sentences is obvious but irrelevant: of course bare EP *sentences* do not express propositions—utterances of them do—and the puzzle is about utterances, not the sentences themselves. Moreover, so the objection goes, not sentences but utterances are the primary linguistic items that have propositional or truth-conditional contents, and it is the business of semantics to give a systematic account of the truth-conditions of what utterance express. . . . In my view, . . . the project of utterance semantics is misguided. For reasons that I can only hint at here, *linguistic* semantics concerns sentences, not utterances." (Bach, 2011, 14)

of bare modal sentences are ambiguous—I do tend to think that often the context can do the same work as a restricting clause—I think the contrast between bare and not bare cases does help motivate the case for ambiguity. For example, in The Boston Case A Sally utters sentence (92). Imagine instead that in this case Sally instead uttered (93) or (94).

(92) Joe may be in Boston.

(93) In view of what I know, Joe may be in Boston. [epistemic]

(94) Given his mother’s illness, Joe may be in Boston. [circumstantial]

Even given the context of the utterance in the Boston Case A, there seems to be semantic content in the latter two revised cases which is missing in the original: in the latter two a modal base is determined, while in contrast there doesn’t seem to be any modal base determined in the original. In the original case did Sally say something more like she would have said had she uttered (93) or more like what she would have said had she uttered (94)?

But I think the best way to motivate the claim that utterances in problematic examples are ambiguous is to consider the way in which the utterances can be evaluated.³⁴ Consider again The Boston Case A. It seems perfectly natural for George, knowing that Joe is in Berkeley, to say (35). But other more charitable responses seem appropriate as well. Consider an alternative way the dialog might go:

(95) Ed: I wonder where Joe is today.

(96) Sally: He may be in Boston.

(97) George:

(a) What do you mean Sally, I just saw him an hour ago here in Berkeley.³⁵

(b) Well given what I know he can’t be—I just saw him an hour ago here in Berkeley.

(c) Maybe given what you know, but I just saw him an hour ago here in Berkeley.

All of these responses by George sound almost as natural as (35) where George flat out denies Sally’s utterance. But, each of these responses respects the epistemic reading. The first, (97 a), suggests that there are multiple readings of Sally’s utterance, possibly some

³⁴This observation is at least close in spirit to some others that Bach uses to motivate his claims. For example, Bach notes that in a case like The Boston Case A what Sally says leaves room for her to clarify her intention: “Joe may be in Boston, I mean, at least I don’t know anything to the contrary.” (Bach, 2011, 3)

³⁵Here “what do you mean” is supposed to be heard as the charitable “could you clarify,” not the uncharitable “huh?”

of which would be true. The next, (97 b), doesn't sound like a flat out denial of Sally's utterance. Here George is making a distinct, non-bare indicative mood modal claim. The last, (97 c), explicitly acknowledges the epistemic reading of Sally's utterance. Since all of these—(35 and 97 a–c)—seem equally natural and they are apparently responding to different propositions there is ambiguity in Sally's utterance.³⁶

So it seems that there is some ambiguity in the utterances of problematic examples. Both circumstantial and epistemic readings are “available,” in some sense. But precisely what sort of ambiguity is involved? What is the cause of the ambiguity? First, it's clear that it's not a grammatical ambiguity. There is no way to parse a sentence like ‘Joe may be in Boston’ to eliminate the ambiguity in Sally's utterance (34). The ambiguity is in some sense due to the indeterminate context. There are some contexts in which Sally's utterance of ‘Joe may be in Boston’ is not ambiguous, e.g. (51) in The Boston Case D. The idea, in line with Bach, is of course that the *sentence* ‘Joe may be in Boston’ is ambiguous between readings of the form *Given ... , Joe may be in Boston*, and that often times the context resolves the ambiguity by doing the work of a restricting clause. What I suggest then is that problematic cases like The Boston Case A are examples where the context does enough work to pick out a few salient readings, but not enough to distinguish between them. Roughly put, Sally's utterance (34) seems to be ambiguous between

(98) Given what I know, Joe may be in Boston.

(99) Given the relevant circumstances, Joe may be in Boston.

and possibly a few other readings.³⁷ The ambiguity in the utterance is an ambiguity with respect to which proposition is being expressed.³⁸

But even admitting that there is some ambiguity in the utterances of problematic cases it is still left to explain why Sally makes this ambiguous utterance and why George, or

³⁶I must admit though that intuitions on this differ. I hear each of (97 a–c) as natural and even appropriate things for George to say. Von Fintel and Gillies seem to deny that they are though. Changing their example slightly, they deny that George could appropriately respond to Sally by saying “OK, but *I* know that they're not there.” (von Fintel and Gillies, 2011, 13,19) I simply disagree, I do not hear anything awkward about this.

³⁷Perhaps if the context was filled in just a bit more, for example if it was common knowledge among Ed, Sally and George that Joe needed to make a trip to Boston, the restricting clauses would reflect those specifics. Then maybe one possible reading would be that Joe may be in Boston, given his need for such a trip.

³⁸And of course this ambiguity is not resolved—in making the utterance the speaker fails to unambiguously assert any definite proposition.

a kibitzer, evaluates it the way he does in the example. It would be nice to give specific assertability conditions and to tell some story about exactly what Sally expresses in uttering (34). But for my primary claim—that the problematic evaluations in problematic examples are best seen as responses to the availability of the circumstantial reading, and hence not good data for the epistemic reading—the details of such a story do not matter.³⁹ For example, I believe both Bach’s radical invariantism and von Fintel and Gillies cloudy contextualism could be adapted as ways to fill in the details of the story sketched above.

Consider von Fintel and Gillies cloudy contextualism. Recall from section 2.2.2 their notion of “putting a proposition into play.” For each utterance of a bare indicative mood modal with prejacent φ in a problematic example the context c_U fails to determine an (epistemic) modal base \mathcal{B} . The facts up until the time of utterance allow for the context c_U to be resolved in multiple ways, each way determining some group G which fixes an (epistemic) modal base \mathcal{B} . Then we say that the utterance “puts into play” all of the modal propositions $Q(\mathcal{B}_i)(\varphi)$ where \mathcal{B}_i is a modal base associated with some group G_i picked out by one of the resolutions of c_U . This story could be amended to the present picture in an obvious way. The claim now would be that for each utterance of a bare indicative mood modal with prejacent φ in a problematic example the context c_U fails to determine a modal base \mathcal{B} . The facts up until the time of utterance allow for the context c_U to be resolved in multiple ways, some of which actually pick out epistemic modal bases and some of which pick out circumstantial modal bases \mathcal{B} , i.e. modal bases \mathcal{B} which are all the worlds compatible with some set of circumstances. Again we would say that the utterance “puts into play” all of the modal propositions $Q(\mathcal{B}_i)(\varphi)$ where \mathcal{B}_i is a modal base, possibly epistemic and possibly circumstantial, picked out by one of the resolutions of c_U .

We can then use von Fintel and Gillies’s story about assertability and evaluation. A speaker can utter a bare indicative mood modal if and only if they are justified in asserting at least one of the modal propositions put into play by the utterance.⁴⁰ Likewise, both conversation partners and kibitzers, we say, will tend to evaluate the utterance by evaluating

³⁹The thrust of my claim is very similar to the thrust of Hawthorne’s. He concludes (2007) by saying, “It is enough for my purposes if there is a danger-theoretic use of modals that cannot be analyzed in terms of the epistemic state of groups of agents, and that this generates readings that explain much of the eavesdropping data with which we began.”

⁴⁰Note that this definition will still work when the context is determinate.

whichever proposition put into play is most relevant to the conversation. For example, in The Boston Case A the “goal,” set by Ed’s question, is to determine where Joe is. Sally’s utterance, so this story goes, puts into play a circumstantial modal. It is most conducive for George, or you the kibitzer, to evaluate this proposition—the circumstantial modal—in light of the goal. We can explain the availability of more charitable responses such as (97 a–c) by saying that they are responses to the epistemic modals put into play by Sally’s utterance (34).⁴¹

Note that the primary criticism of cloudy contextualism from section 2.2.2 no longer applies. The criticism was that while it seemed reasonable that Sally’s utterance (34) in The Boston Case A put into play the epistemic modal propositions associated with the groups containing just Sally, just George, and both Sally and George, the argument for saying that Sally’s utterance (37) in The Boston Case B puts into play an epistemic modal proposition associated with a group containing you, the kibitzer, is a bit weak. The idea in the former case is that each of those three groups seems to be a natural way to resolve the ambiguity, while the justification in the latter case was that you, the kibitzer, were engaged in the same investigation. The move simply seems *ad hoc*. Why think that a reasonable way to resolve the ambiguity inherent in (34) is by an epistemic modal whose base takes into account what is known by arbitrary individuals also pondering over the prejacent? But now on this story we don’t need to claim that Sally’s utterance (34) puts into play such an epistemic modal. Sally’s utterance (34) puts into play, among others, a circumstantial modal and it is that, Hacking’s observation suggests, that the kibitzer is evaluating.

⁴¹Note that my story about conversational pragmatics is slightly different than von Fintel and Gillies. They suggest that speakers tend to evaluate the “strongest” proposition put into play, which accounts for their intuition that responses like (97 a–c) to (34) are inappropriate. I think it is reasonable to assume that which proposition is evaluated depends on the circumstances. Some instances will call for more charity, others not. (von Fintel and Gillies, 2011, 19)

4 Conclusion

People use Moorean indicative mood modals all the time. Sally says “Joe may be in Boston.” The doting grandmother says “It’s possible that it’s a boy, it’s possible that it’s a girl.” The mate says “It’s possible that the ship is in these waters.” But these utterances don’t all express the same flavor of modality. Some of them clearly express circumstantial modality. Some clearly express epistemic modality. And, some “put into play” both readings. The utterance in problematic cases falls into the latter category.

This story takes seriously the observation that there is no single epistemic modal base which explains the problematic cases. It is the epistemic reading which motivates the speaker to make the utterance and the circumstantial reading which motivates the third-party to evaluate the utterance as false. This story also takes seriously Hacking’s observation about objective facts. It explains why practicable investigations *seem* relevant in some cases but not others, or, as the relativist would, say why people sometimes evaluate the utterances based on what they know but not always. The former cases are the ones where there is a salient circumstantial reading in play, the latter cases where there is a clear epistemic reading. This story also does pretty good with the disagreement. The speaker “puts into play” a modal proposition which the evaluator denies.

One of the central original claims made here is the argument about retractions: I have argued that those cases (of utterances of Moorean indicative mood modals) where retractions can be forced are just those cases where there is a salient circumstantial reading. That there is a salient circumstantial reading in cases where a retraction is forced is the natural conclusion to draw from Hacking’s observation. What seems to drive the retraction is the seeming relevance of some objective, non-epistemic factor. The suggestion is that the objective facts, e.g. Joe being in Berkeley, seem relevant because they are relevant. On the other hand, I’ve argued that retractions can’t be forced when Hacking’s observation doesn’t hold, i.e. when objective facts don’t seem relevant.

As sketched in the introduction, it’s not difficult to miss the circumstantial reading given that both circumstantial and epistemic readings trade in what’s possible given some set of

facts. The difference between the two lies in perspective. The modal base for epistemic modals consists of possible worlds consistent with facts that are known, while the modal base for circumstantial modals consists of possible worlds consistent with the circumstances (the facts that hold.) They end up looking similar because we generally assess both circumstantial and epistemic modals based on what is known of the circumstances—it's just that in the former case what delimits the modal base is the circumstances while in the later case it's what is known of them.

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